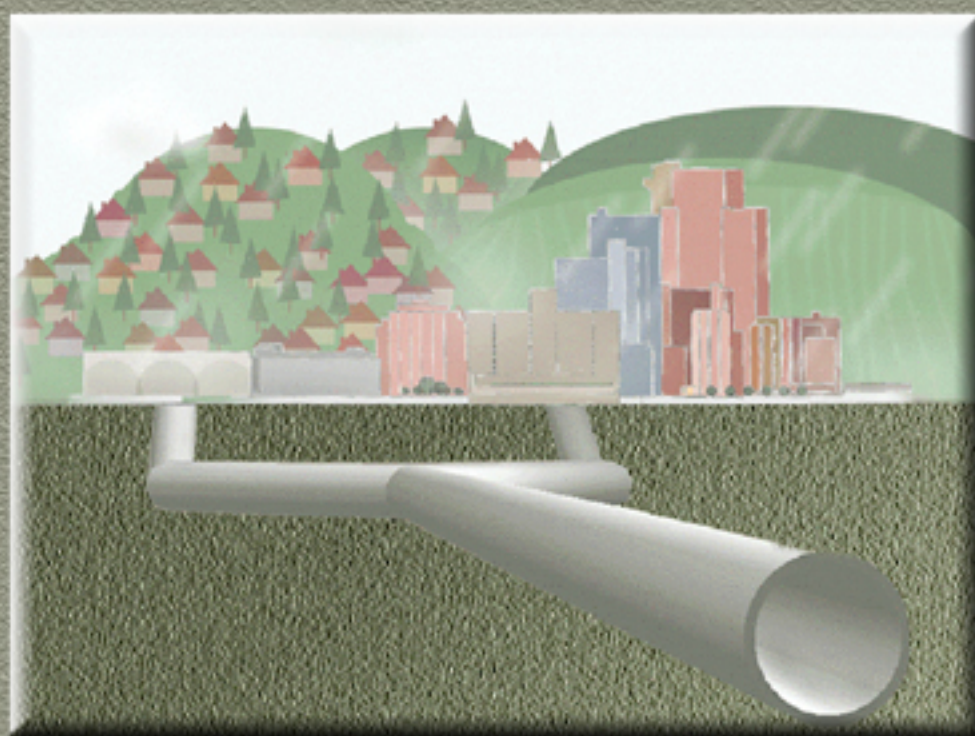


- CSI PROJECT -
SE LAKE WASHINGTON
SUBREGIONAL PLANNING AREA

FINAL TASK 210 REPORT
PLANNING RECORD SUMMARY

FINAL TASK 220 REPORT - EXISTING FACILITIES
FINAL TASK 230 REPORT - EXISTING CONDITIONS

July 2003



King County

Department of
Natural Resources and Parks
Wastewater Treatment Division

Note:

Some pages in this document have been purposefully skipped or blank pages inserted so that this document will copy correctly when duplexed.

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**KING COUNTY CONVEYANCE SYSTEM
IMPROVEMENT PROJECT**

**SE LAKE WASHINGTON SUBREGIONAL
PLANNING AREA**

FINAL TASK 210 REPORT

PLANNING RECORD SUMMARY

July 2003



KING COUNTY

INTRODUCTION

The Conveyance System Improvements Project (CSI) is a comprehensive evaluation of the county conveyance system and an assessment of requirements to transport flows projected to the year 2050. This report is one in a series of reports that identifies and evaluates specific King County regional wastewater conveyance system issues related to capacity limitations, as well as the system improvements or additions required to eliminate those limitations by Subregional Planning Area (SPA). Consideration has been extended to local service issues and projected growth. The SPA described in this report is the Southeast (SE) Lake Washington Area, shown in Figure 210-1.

The original plan for sewerage in King County was developed in the *1958 Metropolitan Seattle Sewerage and Drainage Survey*. This plan was developed for the City of Seattle, King County, and the Washington State Pollution Control Commission between 1956 and 1958, to provide a long-range plan for the collection, treatment, and disposal of wastewater from the metropolitan Seattle area. The need for a long-range wastewater management plan was based on the rapid population expansion in King County and the increasing pollution of Lake Washington and other local surface waters. The planning horizon for the 1958 Plan was 2030, which corresponded with the longest economic life of any of the facilities likely to be constructed. The plan was based on population forecasts through 2030.

The urban growth area (UGA) boundary, adopted by King County in response to the state Growth Management Act (GMA) in 1998, excludes some areas included in the King County service area defined in the *1958 Metropolitan Seattle Sewerage and Drainage Survey* (referred to as the 1958 Plan). These changes and future growth projections have spurred development of local sewerage systems within this planning area and will be the source of future demands upon the regional conveyance system. SE Lake Washington SPA is one of such areas.

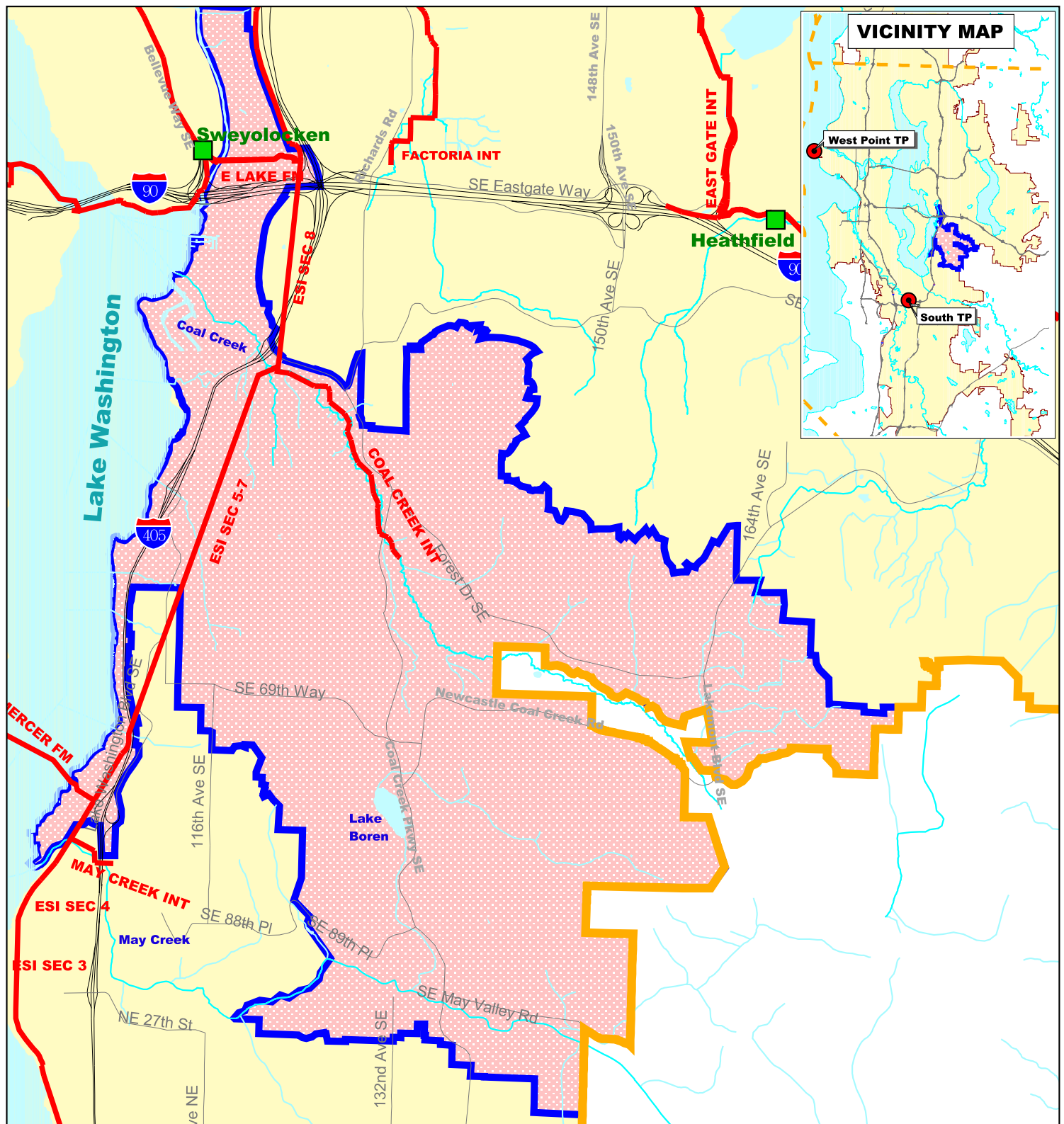
The SE Lake Washington SPA is approximately 5,957 acres with about 1,524 acres tributary to the Eastside Interceptor and about 3,899 acres tributary to the Coal Creek Interceptor.

Figure 210-1 also shows the King County sewer service area vicinity map, the urban growth area boundary, and County facilities within the SE Lake Washington SPA.

The sections below describe the SE Lake Washington SPA in relation to existing regional and local wastewater service areas. The description includes growth management impacts and local sewer service area boundaries, size, location, and population. The SE Lake Washington SPA includes all local sewer basins tributary to the Coal Creek Interceptor. Service area boundary changes and impacts are discussed. The 1958 Plan and amendments are compared to current planning in the SE Lake Washington SPA. There are no Regional Wastewater Services Plan coordination issues in this planning area.

In a subsequent section, a brief summary of pertinent planning documents is presented to provide a historical reference for the SE Lake Washington SPA. Factors that have contributed to long-term service planning for this area are discussed. Potential inconsistencies between these planning documents and the King County Regional Wastewater Services Plan (RWSP) are noted.

Maps presented throughout this study show significant changes between the 1958 Plan and current service areas.



**Figure 210 - 1: SE Lake Washington
Subregional Planning Area**

KC Facilities & Vicinity Map

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0.2 0 0.2 0.4 0.6 0.8 Miles



June 24, 2003

Legend

- KC Pump Stations
- KC Conveyance Lines
- 2002 UGA Boundary
- Streets
- Stream
- SE Lake Washington Basin
- WTD Service Area

REGIONAL WASTEWATER SERVICE AREA

King County and four other planning authorities, including three cities and one water district, have planning jurisdiction within the SE Lake Washington SPA. Within the planning area, local service agencies provide local wastewater collection and convey flow to King County regional facilities. The urban growth area, as identified in the *King County Comprehensive Plan 2000*, defines the eastern boundary of the planning area. The urban growth area includes incorporated cities, developing suburbs, and most of the county's population and economic base. Most of King County's past growth has occurred in its cities and in unincorporated urban areas. Because future growth is encouraged in these areas, sewer service is limited to the urban growth area.

The SE Lake Washington SPA includes part of the incorporated municipalities of Bellevue, Newcastle, and Renton. Figure 210-2 shows the city boundaries within the SE Lake Washington SPA and the 2002 urban growth area boundary.

Local sewer service providers within the SPA include the cities of Bellevue and Renton, as well as the Coal Creek Utility District. The Coal Creek Utility District serves portions of unincorporated King County, Bellevue, Renton, and Newcastle. Sewer service agency and district boundaries are generally different from city limit boundaries and actual areas served. Figure 210-3 shows the sewer service agency boundaries of each local sewer service provider within the SE Lake Washington SPA. Comprehensive plans of local sewer service agencies and districts generally include service areas larger than the areas within their boundaries. Local service agencies serve areas inside the boundaries of other service agencies under interlocal agreements. Figure 210-4 compares the local agency boundaries with the city boundaries.

CURRENT KING COUNTY SERVICE BASINS

Figure 210-5 shows the King County sewer basins as delineated in the *1994 Regional Wastewater Services Plan—Wastewater 2020 Plus, Existing Conditions* report, major facilities, and existing county sewer lines. Coal Creek and Hazelwood are the primary King County service basins within the SPA. Small areas of the May Creek, Factoria, Eastgate, and Renton ESI-2 basins extend into the SE Lake Washington SPA.

1958 PLAN

The *1958 Metropolitan Seattle Sewerage and Drainage Survey* set forth a comprehensive plan to provide gravity sewer service to the SE Lake Washington SPA. The 1958 Plan was amended several times. Figure 210-6 shows the local service areas and the major sewer lines proposed by the plan within the South Lake Washington (SLW), East Lake Washington (ELW), and South Lake Sammamish (SLS) sewerage areas as defined in the 1958 Plan. The 2002 urban growth area boundary is also shown. SLW is approximately 34,230 acres with 2,390 acres in the SPA. ELW is approximately 36,640 acres with 3,290 acres in the SPA. SLS is about 28,990 acres

with about 10 acres in the SPA. About 280 acres are not within 1958 Plan service basins. The service area includes parts of the cities of Bellevue, Newcastle, and Renton.

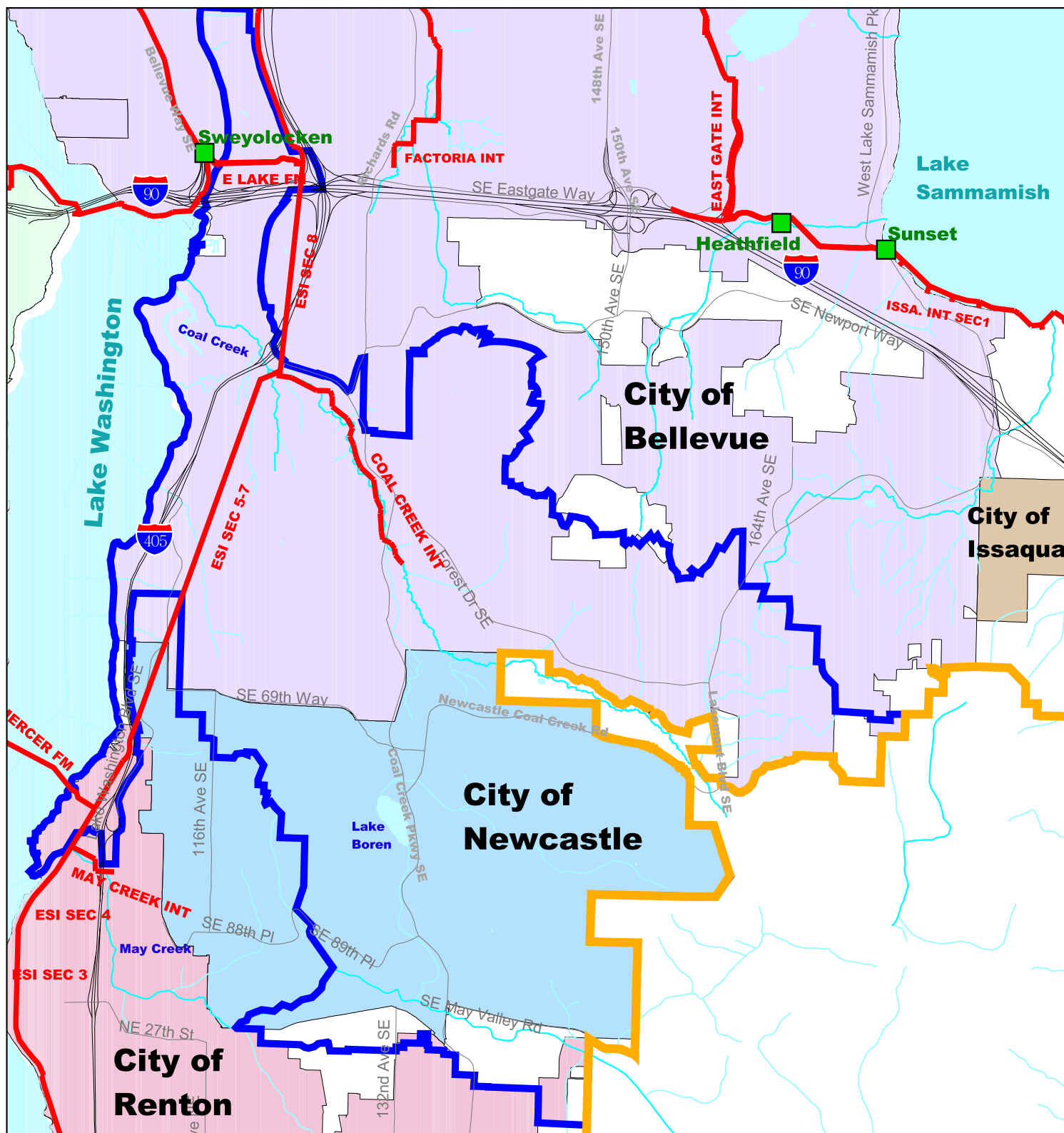
Figure 210-7 compares the King County major facilities as well as the 1958 Plan sewerage areas and facilities. There are several major changes as a result of planning since 1958. The 2002 urban growth area precluded sewer service to much of the eastern portion of the 1958 sewerage area. Neither the Coal Creek nor the May Creek Interceptors have been extended as far east as proposed by the 1958 Plan. Local pump stations direct flow from the east portion of the Southeast Lake Washington SPA northwest to the Coal Creek Interceptor. Another small southeast area is currently pumped southwest by the City of Renton to the May Creek Interceptor.

UNINCORPORATED KING COUNTY

Only a small portion of the SE Lake Washington SPA within the urban growth area is located in unincorporated King County. That area is shown on Figure 210-2.

URBAN GROWTH AREA

In response to the state Growth Management Act, the *King County Comprehensive Plan 2000* defined an urban growth area, which generally reduced the 1958 planning area. The urban growth area boundary eliminates much of the eastern portion of the 1958 planning area. The SE Lake Washington SPA has been defined entirely within the urban growth area. All figures show the urban growth boundary. Figure 210-7 shows the 1958 Plan sewerage areas and the 2002 urban growth area boundary.



**Figure 210 - 2: SE Lake Washington
Subregional Planning Area
Cities**

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SE Lake Washington\lake_wa_task210.apr

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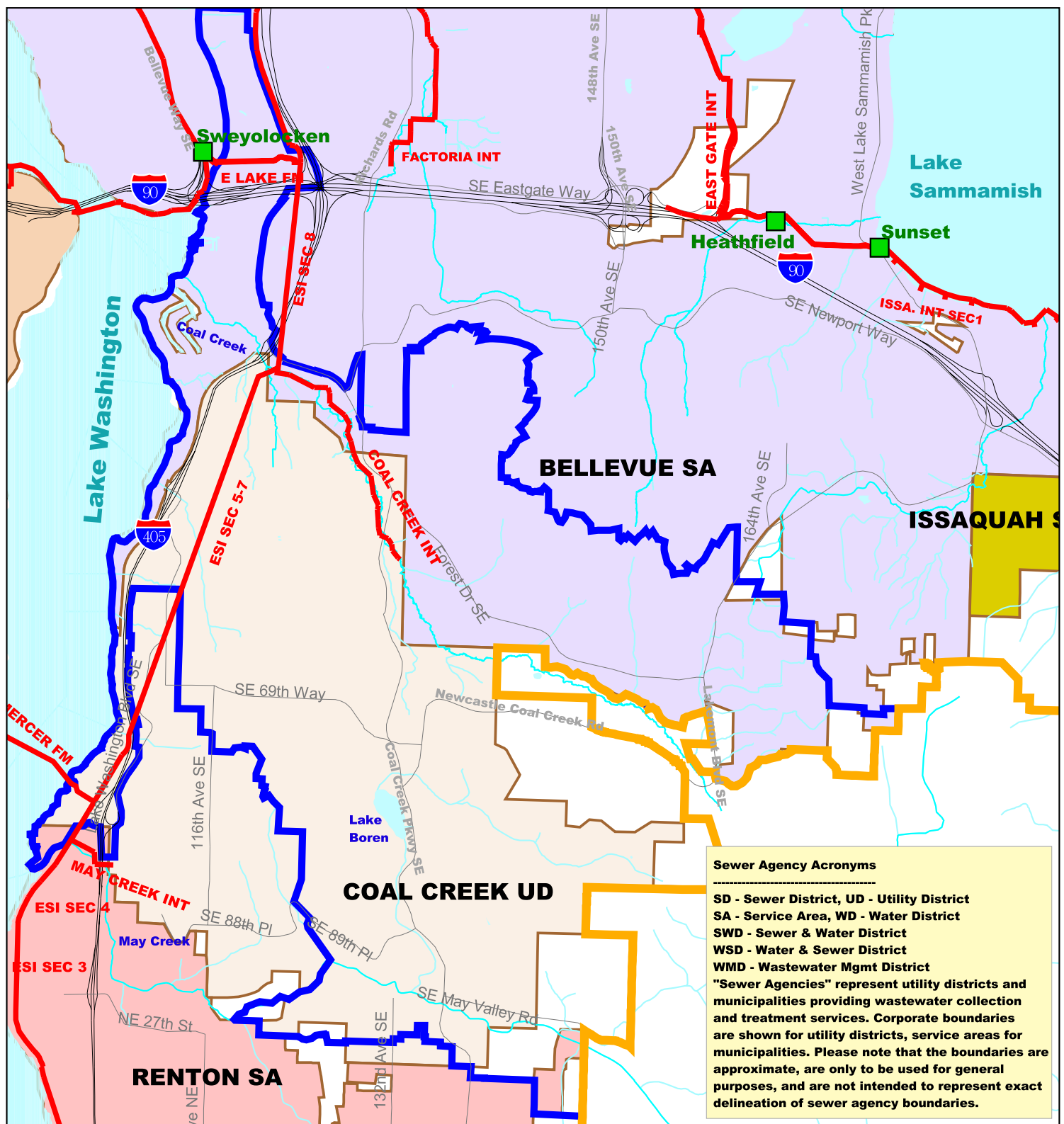
0.2 0 0.2 0.4 0.6 0.8 Miles



July 24, 2003

Legend

- KC Pump Stations
- KC Conveyance Lines
- 2002 UGA Boundary
- Streets
- SE Lake Washington Bndry
- Stream



**Figure 210 - 3 : SE Lake Washington
Subregional Planning Area
Local Sewer Agencies**

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 \SE Lake Washington\selake_wa_task210.apr



King County



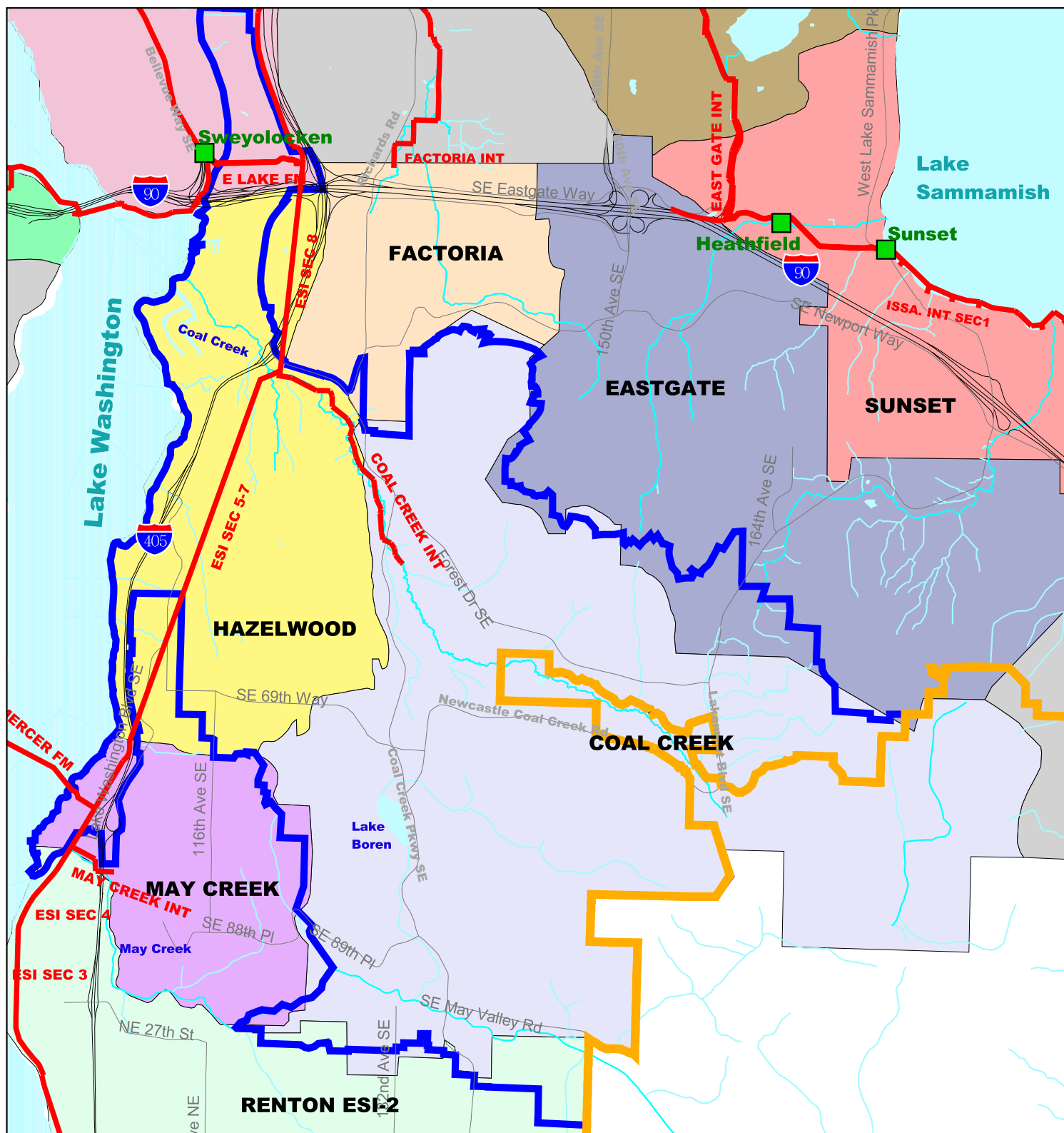
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Legend

- KC Pump Stations
- KC Conveyance Lines
- 2002 UGA Boundary
- Streets
- SE Lake Washington Bndry
- Stream



**Figure 210 - 5: SE Lake Washington
Subregional Planning Area
King County Sewer Basins**

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SE Lake Washington\lake_wa_task210.apr



King County



0.2 0 0.2 0.4 0.6 0.8 Miles

July 24, 2003

Legend

- KC Pump Stations
- KC Conveyance Lines
- 2002 UGA Boundary
- Streets
- SE Lake Washington Bndry
- Stream

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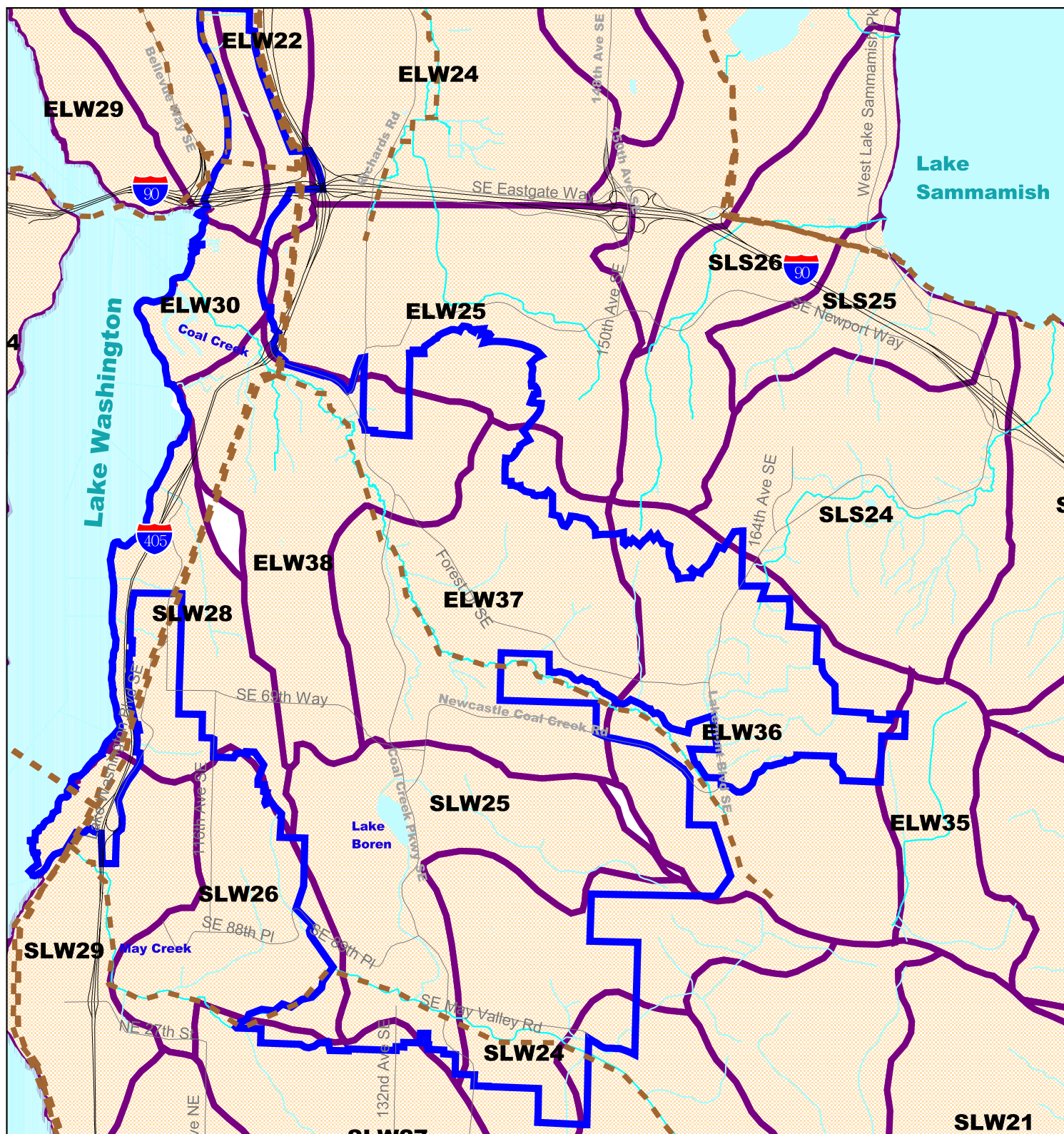


Figure 210 - 6: SE Lake Washington Subregional Planning Area

1958 Plan: South, East Lk Washington and S Lake Sammamish Sewerage Areas, Local Service Areas and Service Sewers

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King County



0.2 0 0.2 0.4 0.6 0.8 Miles

July 24, 2003

Legend

- 1958 Green River Sewerlines
- Streets
- SE Lake Washington Bndry
- Stream
- 1958 Basins

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 \SE Lake Washington\selake_wa_task210.apr

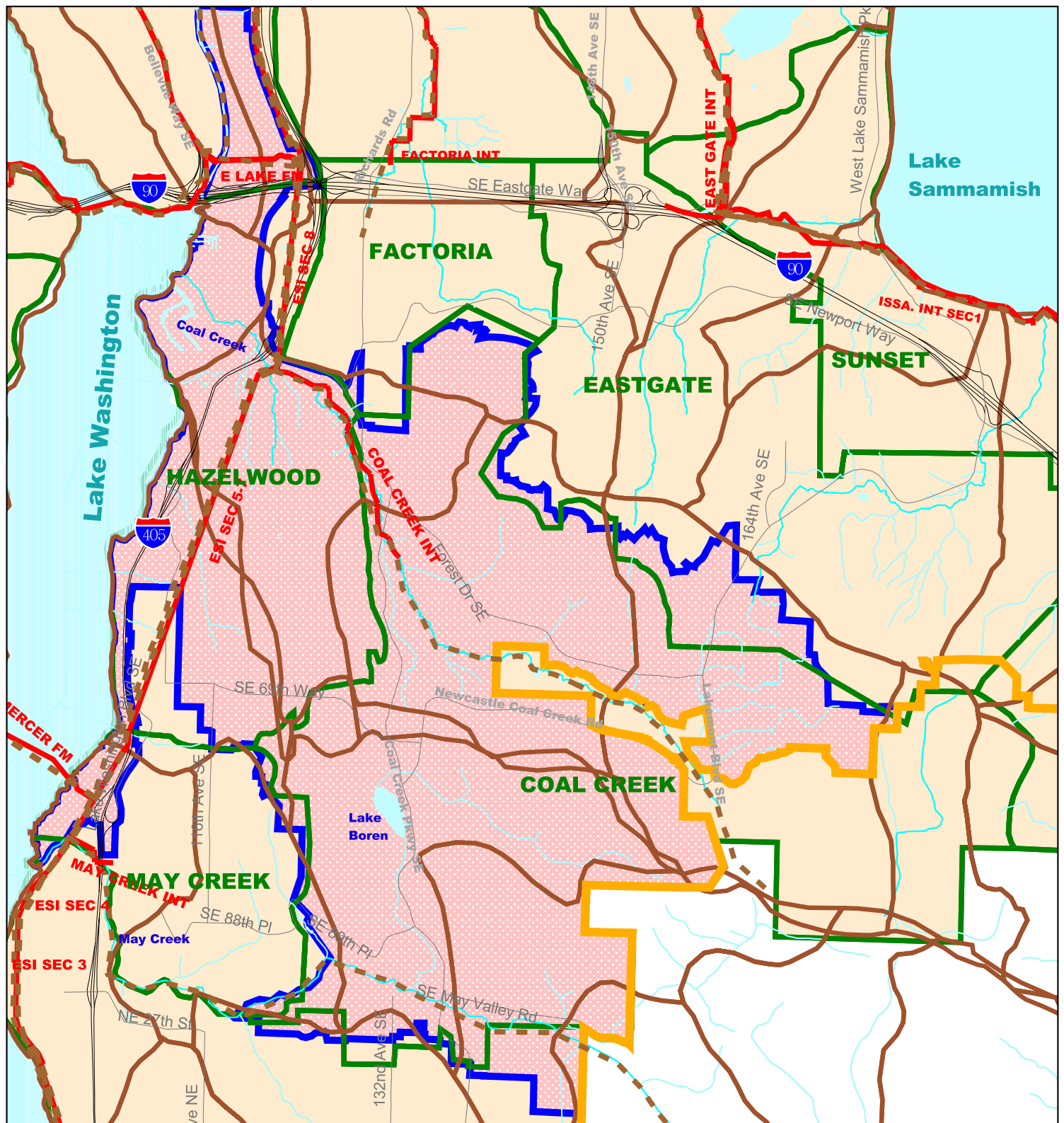


Figure 210 - 7: SE Lake Washington

Subregional Planning Area

Comparison of 1958 Plan with Current King County Sewer Basins & Interceptors

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King County



July 24, 2003

0.2 0 0.2 0.4 0.6 0.8 Miles

Legend

- 1958 Green River Sewerlines
- KC Conveyance Lines
- 2002 UGA Boundary
- Streets
- 1958 Basins
- Stream
- SE Lake Washington Basin
- WTD RWSP Basins

LOCAL WASTEWATER SERVICE AREAS

CITY OF BELLEVUE

The following information is from the *City of Bellevue Comprehensive Wastewater Plan, Bellevue, Washington, 2002*; *City of Bellevue Comprehensive Sewer Plan – Addendum Number 1 – Eastgate Comprehensive Sewer Plan* (CHS Engineers, Inc., 1995); and the King County GIS database (2003).

Figure 210-8 shows the city boundaries, local service areas, pump stations, and sewers for the City of Bellevue within the Southeast Lake Washington SPA.

SERVICE AREA

The City of Bellevue is located north of Newcastle and extends into the northern portion of the SE Lake Washington SPA. The City of Bellevue is the designated sewer service provider for most of the area within its city limits except a small portion of the City, which is served by Coal Creek UD. Bellevue serves some small areas of unincorporated King County within the SPA. In 1994 and 2002, the Bellevue service area was approximately 16,018 and 22,399 acres respectively. In 1994, Bellevue served a population equivalent of 309,421 people including residents and employees. The 2002 Comprehensive Plan showed a projected 1999 population of 121,846. The 1995 annexation of the Eastgate Sewer District added 3,800 acres for a total of 19,818 acres and about 31,000 people.

Bellevue served approximately 22,399 acres within the SPA according to the 2002 Comprehensive Plan. The King County GIS coverage shows a significantly different service area for Bellevue than is shown in the City's 2002 comprehensive plan. These differences exist in the southeast portion of the service area. Bellevue's 2002 Comprehensive Plan shows service to the 2002 UGB in the eastern portion of the planning areas. A franchise agreement with King County (November 1995) exists for this area and expires in 2020. This area is about 243-acres in size and should not have a significant impact on the Coal Creek Trunk.

BASINS

Bellevue has forty-two major drainage basins and ten minor basins. Only five Bellevue sewer service basins extend into the Southeast Lake Washington SPA. They are generally subbasins within the larger King County service basins of Hazelwood, Coal Creek, and a small part of the Factoria and Eastgate basins. Direction of flow in the Bellevue basins is generally the same as in the King County basins and as anticipated by the 1958 Plan.

COAL CREEK UTILITY DISTRICT

The following information is from the *Coal Creek Utility District 2002 Interim Comprehensive Sewer System Plan* (Pace, 2002) and the King County GIS database.

Figure 210-8 shows the city boundaries, local service areas, pump stations, and sewers for the Coal Creek UD.

SERVICE AREA

The Coal Creek Utility District (UD) occupies most of the southwest portion of the SE Lake Washington SPA. The service area includes portions of the cities of Newcastle, Bellevue, and Renton, and small areas of unincorporated King County along the south boundary of the SPA. Approximately one-third of the District serves area within the city limits of Bellevue. In 2002, the Coal Creek UD service area was approximately 6.5 square miles and served about 16,518 people. Coal Creek UD serves approximately 3,312 acres within the SPA.

The King County GIS coverage shows approximately the same service area for the Coal Creek UD that is shown in the District's comprehensive plan except for the eastern portion of the basin. The alterations in the service basins reflect changes in the urban growth boundary.

BASINS

Coal Creek UD sewer service basins, as defined by the sewer comprehensive plan, are generally subbasins within the larger King County service basins of Hazelwood, Coal Creek, and May Creek. The District identifies only two local basins. All of one basin and part of the other local basin are within the SPA. Direction of flow from the local basins is the same as for the King County basins. The 1958 Plan anticipated that flow from the southeast portion of the District would be routed to the May Creek Interceptor, but it is unlikely that the connection will ever be completed due to environmental constraints. Currently, local pump stations route that flow north to the Coal Creek Interceptor rather than along the route proposed by the 1958 Plan.

CITY OF RENTON

The following information is from the *Long-Range Wastewater Management Plan, A Comprehensive Sewer System Plan – 1998* (Renton, 1999) and the *City of Renton Infiltration/Inflow Program* (Brown and Caldwell, 1995).

Figure 210-8 shows the city boundaries, local service areas, pump stations, and a portion of sewers for the City of Renton.

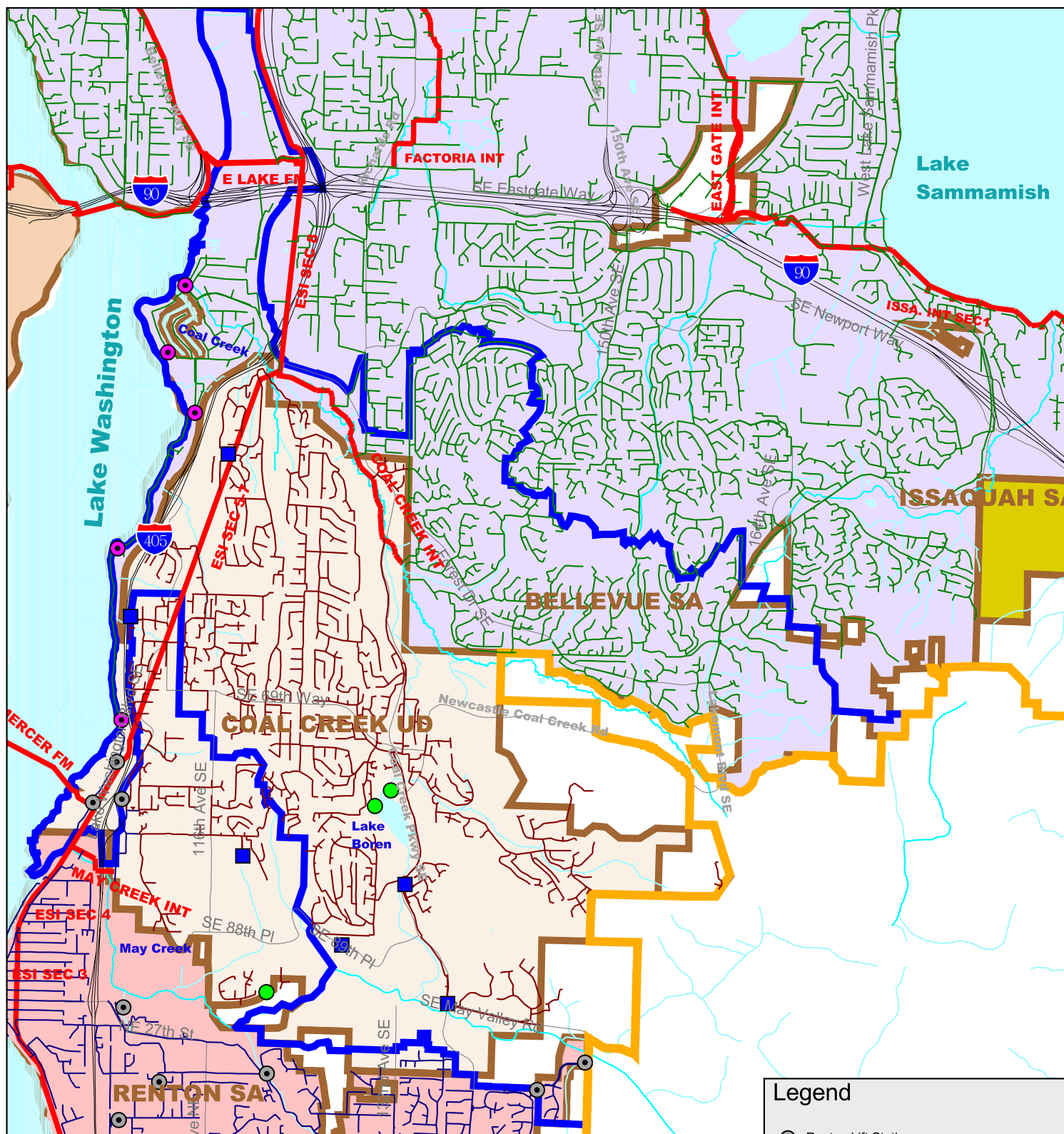
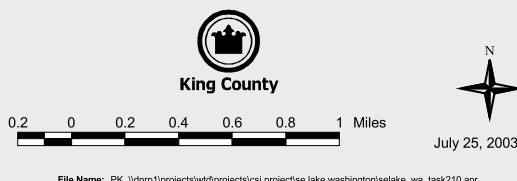


Figure 210 - 8: SE Lake Washington Subregional Planning Area

Local Facilities: Bellevue and Coal Creek Utilities District

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Legend

- Renton Lift Station
- Bellevue Local PS
- Coal Creek Pump Station
- Proposed
- Existing
- Local Sewerline
- BELLEVUE SA
- COAL CREEK UTILITIES
- RENTON SA
- KC Conveyance Lines
- 2002 UGA Boundary
- Streets
- SE Lake Washington Bndry
- Stream
- Sewer Agency Boundaries

SERVICE AREA

Very small areas of the City of Renton service area are located in the southeast portion of the SE Lake Washington SPA, south of the Newcastle/Coal Creek UD. The City of Renton is the designated sewer service provider for most of the area within the city boundaries though some of the southeast area is served by Soos Creek WSD and some area in the west is served by Tukwila. In 1999, the Renton service area was approximately 16.5 square miles and served about 45,000 people. Renton serves approximately 334 acres within the SPA.

The King County GIS coverage shows a slightly different service area for Renton than is shown in the City's comprehensive plan. The differences are generally outside the Southeast Lake Washington SPA. Renton has proposed a service area boundary change between itself and the Coal Creek UD.

BASINS

Renton serves several King County basins. The King County basins relevant to the Southeast Lake Washington SPA are the Renton ESI-2, Hazelwood, and May Creek. The City identifies only nine local basins. Most of one basin is in the Coal Creek UD with about three-fourths of the basin within the SPA. Small parts of one other basin are within the SPA. The rest of the basins are not within the SPA. The direction of flow is generally the same as the King County basins and as anticipated by the 1958 Plan.

CITY OF NEWCASTLE

The City of Newcastle is served by the Coal Creek Utility District.

PLANNING RECORD

The following planning documents provide a historical reference for the SE Lake Washington SPA. This section describes factors that have contributed to long-term service planning for this area. Figures throughout this study show significant changes between the original and current service areas. Potential inconsistencies between these planning documents and the King County RWSP are noted in the Task 220 report discussion of existing facilities and local agency planning.

1958 METROPOLITAN SEATTLE SEWAGE AND DRAINAGE SURVEY

The *1958 Metropolitan Seattle Sewage and Drainage Survey* (Brown & Caldwell, 1958) was developed for the City of Seattle, King County, and the Washington State Pollution Control Commission between 1956 and 1958 to provide a long-range plan for the collection, treatment, and disposal of wastewater from the metropolitan Seattle area. The need for a long-range wastewater management plan was based on the rapid population expansion in King County and the increasing pollution of Lake Washington and other local surface waters. The planning horizon for the 1958 Plan was 2030, which corresponded with the longest economic life of any of the facilities likely to be constructed, and the population forecasts on which the plan was based were developed through that year.

The 1958 Plan divided the metropolitan Seattle area into 12 distinct sewerage areas. The divisions were based primarily on geography and economics but also included factors such as political boundaries, population distribution, land use, and location and condition of existing facilities.

The report concluded that the most economic and efficient solution to sewerage problems in the metropolitan Seattle area would be to convey sewage from large areas to a single point or relatively few points for treatment and disposal. The local service areas would be sewered with 6-inch to 24-inch service sewers. The service criteria then (and now) required service to be financially justifiable and required each local service area to contain no less than 1,000 acres.

The service sewers were planned to contribute to large feeder sewers, trunks, and interceptors within the sewerage area. The feeder sewers from the individual sewerage areas would convey the sewage to a treatment plant that would receive flow from many sewerage areas. Treated sewage would be pumped from the plant to an outfall for disposal in a designated body of water.

Construction timing in the 1958 Plan was based on urgency of the required facilities (including sewer mains) as a result of population growth or the need for pollution mitigation. Population forecasts and distribution were used to estimate construction timing and treatment plant loadings. Construction was planned to occur in three stages. Stage I, scheduled for the period from 1960 to 1970, included facilities required to alleviate serious pollution and flow-loading problems. Stage II, planned for 1970 to 1980, included extension of the collection and conveyance system

to serve additional areas where the most rapid population growth was expected to occur. Stage III, scheduled for the period after 1980, included all remaining facilities required serving further population growth. The original schedule of work was subsequently amended to four phases.

Under the revised first stage of treatment system improvements (1960 to 1970), 28 small treatment plants were closed, and 46 primary treatment discharge points into Lake Washington and Lake Sammamish were eliminated. Three new primary treatment plants began operations, ranging from 3.2 million gallons per day (mgd) (Richmond Beach and Carkeek Park) to 125 mgd (West Point). Secondary treatment facilities were constructed at the South Treatment Plant at Renton, and more than 90 miles of large-diameter sewers, tunnels, and underwater pipelines were constructed.

The second stage of the plan (projects completed 1960 to 1990) was modified twice, in 1970 and in 1982. The second-stage plan included the following elements:

- South Treatment Plant, West Point, and Alki treatment plant improvements
- Eastgate trunk sewer and Issaquah interceptor construction
- Coal Creek, West Valley, and Lake Sammamish interceptor construction
- Two major combined sewer overflow (CSO) control projects
- Kenmore pump station construction
- North interceptor rehabilitation
- Juanita pump station modification.

The third-stage project facilities, completed in 1991, included three major efforts:

- West Point and South Treatment Plant upgrade projects
- Kenmore interceptor and Matthews Park pump station improvements
- Extension of North Creek and northeastern Lake Sammamish interceptors.

Subsequently, a fourth stage of wastewater projects was added, consisting of more than a dozen projects scheduled through 1997. Elements of the fourth-stage plan continued King County's move away from a decentralized system of several smaller treatment plants to a centralized system characterized by secondary treatment and only two large plants, at Renton (the South Treatment Plant) and West Point. The Richmond Beach plant was replaced with a pump station, and Alki and Carkeek facilities were converted to stormwater/CSO treatment facilities with transfer of base sanitary flows to the West Point plant. Other fourth-stage projects include pump stations, regulators, tunnels, and conveyance and separation facilities.

CODIFICATION OF METRO'S COMPREHENSIVE SEWERAGE PLAN

This is a summary document of the 1958 Plan amending resolutions from 1961 through 1989. These amendments implemented the original plan and made some changes to it. None of the resolutions specifically modified plans to serve the Southeast Lake Washington SPA.

WASHINGTON GROWTH MANAGEMENT ACT

As part of its planning process, King County must meet the requirements of the 1990 state Growth Management Act. This law directs affected counties, including King County, to develop comprehensive growth management plans to define urban growth boundaries and to ensure that facilities and services needed to sustain growth are in place when required. Implementation of the sewer comprehensive plans includes making capital investments, regulating land uses, and identifying and protecting environmentally sensitive areas and resource lands. The Growth Management Act directs counties and cities to adopt jointly prepared “county-wide planning policies.” These regional policies are frameworks around which counties and cities develop sewer comprehensive plans.

King County’s vision of the future, embodied in its *County-Wide Planning Policies*, was developed by the King County Growth Management Planning Council (GMPC), which consists of the King County executive, five members of the Metropolitan King County Council, three representatives of the City of Seattle, six representatives from the suburban cities, and one ex-officio member representing the Port of Seattle. The *County-Wide Planning Policies* address issues such as siting of facilities, as well as timing and phasing of land development in concert with facilities and services. The King County Council adopted the *County-Wide Planning Policies* by Ordinance No. 10450 on July 6, 1992.

One of the major goals of the Growth Management Act is concurrency. Concurrency is defined as, to the extent possible, specific infrastructure systems are in place at the same time development occurs. The concurrency goal is intended to make sure that development (population and employment growth) occurs initially in areas that have urban services available. If the infrastructure will not be in place to accommodate a minimum of 20 years of projected growth, the Growth Management Act requires that land use, financing mechanisms, or levels of service be reassessed. This reassessment ideally results in a balance of capital facilities, land use planning, and financing, and hence a concurrent accommodation of growth. Strict concurrence is required only for transportation elements but is a goal for all other infrastructure elements as well.

Concurrency for King County wastewater facility planning means that if sewer conveyance and treatment system infrastructure is not in place when needed, then levels of service (such as numbers of combined sewer overflows, discharge limits, or infiltration and inflow accommodation) should be reassessed.

KING COUNTY COMPREHENSIVE PLAN 2000

The Metropolitan King County Council established an urban growth area in the 1994 *King County Comprehensive Plan* and the 1995 amendment. Future growth and development should be confined to the urban growth area, as defined by the urban growth boundary, to limit urban sprawl, enhance open space, protect rural areas, and provide for more efficient use of human services, transportation, and utilities. The *King County Comprehensive Plan 2000* includes

capital facilities and utilities elements that contain a review and approval process for sewer plans within the county. King County's regional wastewater conveyance and treatment system and facilities are specifically included in the adopted comprehensive plan (provided in Volume One of the Technical Appendices of the comprehensive plan).

The *King County Comprehensive Plan 2000* indicates that within the urban growth area, construction of public sewers is encouraged, to allow the maximum density to be achieved. Public sewers should be provided to replace onsite treatment systems. The *County-Wide Planning Policies* restrict public sewer expansions in rural areas and on natural resource lands unless they are tightlined (no service laterals permitted) and a finding is made that no reasonable alternative technologies are feasible.

Ultimately, the *King County Comprehensive Plan 2000* confines concentrated development to the urban growth area, where services are already provided, or requires service to be provided concurrently with development. This can be accomplished by changing development patterns and zoning and by offering incentives to direct growth within the urban growth area.

KING COUNTY REGIONAL WASTEWATER SERVICES PLAN (RWSP)

The *Regional Wastewater Services Plan* (King County Wastewater Treatment Division, 1996) is the King County long-range planning road map defining the strategy for providing regional wastewater services in the Seattle metropolitan area. The RWSP scope is comprehensive in nature, addressing wastewater treatment and conveyance needs, the combined sewer overflow control program, the biosolids management program, and opportunities for water reuse. The policies guiding the provision of wastewater services, as well as the programmatic initiatives and facilities needed to address those services, comprise the plan. The RWSP does not specifically examine the SPA drainage.

KING COUNTY RWSP—WASTEWATER 2020 PLUS, EXISTING CONDITIONS

As part of a planning project to assess the long-term wastewater conveyance and treatment needs of King County, the *Wastewater 2020 Plus, Existing Conditions* (HDR Engineering, Inc., 1994) report described capacity and limitations of existing wastewater conveyance and treatment facilities through 1996. The report determined the impacts of infiltration and inflow and provided alternatives for management of infiltration and inflow. The study developed wastewater flow projections and forecast conveyance and treatment facility needs based on population forecasts reflecting 1990 census data, economic conditions, and growth management visions. Wastewater conveyance and treatment needs were examined in a broad regional context to assess mutually beneficial opportunities for service arrangements with other counties. The study provided planning level analysis of system conveyance and treatment facility needs.

KING COUNTY RWSP—WASTEWATER 2020 PLUS, SOUTH INTERCEPTOR PARALLEL VALIDATION STUDY

The *King County RWSP—Wastewater 2020 Plus, South Interceptor Parallel Validation Study* (HDR Engineering, Inc., 1993) established a planning area called the Metro South Interceptor Basin. All flow that enters the King County treatment plant at Renton from the south originates within this basin. Planning areas for two urban growth boundaries were evaluated. One urban growth area was defined by the 1985 *King County Comprehensive Plan*, and the other was defined by the Growth Management Policy committee as adopted by the King County Council on July 6th, 1992. For that planning area, the study describes population and flow characteristics and projects flow to 2030 at saturation for the hydrologic basins. The study used 1990 census and Puget Sound Regional Council (PSRC) data for population, employment, and land use.

CITY OF BELLEVUE COMPREHENSIVE WASTEWATER PLAN

The *City of Bellevue Comprehensive Wastewater Plan* (Bellevue, 2002) details the sewer utility policies including expansion and financial policies. It also describes the service area, existing system, land use, and physical characteristics. It discusses planning and evaluation criteria, hydraulic analysis, and modeling results and recommendations. It describes utility operations and maintenance. It presents a capital improvement program and discusses implementation and financial considerations. It discusses service agreements with King County, Kirkland, Redmond, and Eastgate. It states that the ultimate service area may include that portion of Coal Creek UD within the City of Bellevue and the Eastgate Sewer District.

CITY OF BELLEVUE COMPREHENSIVE SEWER PLAN – ADDENDUM NUMBER 1 – EASTGATE COMPREHENSIVE SEWER PLAN

The *City of Bellevue Comprehensive Sewer Plan – Addendum Number 1 – Eastgate Comprehensive Sewer Plan* (CHS Engineers, Inc., 1995) discussed the annexation of Eastgate SD into the City of Bellevue sewer service area. It describes the Eastgate service area and physical and natural characteristics, discusses population and land use, recommends improvements, and discusses financial considerations. It also discusses the existing system, minimum design criteria, and operation and maintenance requirements. The Eastgate design criteria chapter is superseded by the Bellevue design criteria. It compares Eastgate and Bellevue planning and evaluation criteria. It includes flow modeling for the major trunks in the Eastgate system. It lists service agreements with King County, Lake Hills SD (now Bellevue), and Bellevue.

CITY OF RENTON LONG-RANGE WASTEWATER MANAGEMENT PLAN, A COMPREHENSIVE SEWER SYSTEM PLAN – 1998 DRAFT

The *City of Renton Long-Range Wastewater Management Plan* (City of Renton, 1999) described the existing system, provided a topographic map, discussed operations and land use policies, discussed system analysis and results, recommended proposed improvements, and discussed financial analysis. It also discussed analysis and design criteria, inflow and infiltration, and operation and maintenance. It lists service agreements with King County, Newcastle, Soos Creek Water and Sewer District (WSD), Issaquah School District, Coal Creek WSD (formerly WD No. 107), WD No. 90, Skyway WSD, and Cascade SD that is now part of Soos Creek WSD.

COAL CREEK UTILITY DISTRICT INTERIM COMPREHENSIVE SEWER SYSTEM PLAN

The *Coal Creek Utility District Comprehensive Sewer Plan* (Pace, 2002) defines the study area and discusses physical and natural characteristics, operations and maintenance, and population forecasts. It also discusses the existing system, design criteria and construction standards, and system analysis. It recommends improvements, and discusses implementation and financial considerations. It also lists and describes several interlocal agreements.

CITY OF RENTON INFLOW / INFILTRATION PROGRAM

The *City of Renton Inflow / Infiltration Program* (Brown & Caldwell, 1995) describes the Renton service area characteristics, including political and service area boundaries, land use and zoning, physical environment, and drainage. It discusses collection system characteristics including the existing and future collection system and the aquifer protection ordinance. It describes the flow monitoring program and flow data analysis and presents hydrologic simulation modeling results. The discussion of conclusions and recommendations includes a description of the proposed future infiltration and inflow control program, as well as methods for source detection, source identification, and sewer rehabilitation. It discusses program funding options and presents financial guidelines.

**KING COUNTY CONVEYANCE SYSTEM
IMPROVEMENT PROJECT**

**SE LAKE WASHINGTON SUBREGIONAL
PLANNING AREA**

FINAL TASK 220 REPORT

EXISTING FACILITIES

July 2003



KING COUNTY

INTRODUCTION

This Task 220 Report describes existing sewerage facilities, known rehabilitation requirements, planned system changes, and operation and maintenance within the SE Lake Washington SPA. The discussion is divided into King County's regional facilities and facilities owned by local service agencies (local sewer agencies). Potential inconsistencies between local agency planning and other planning records described in the Task 210 Report are discussed.

REGIONAL FACILITIES

King County owns and operates two interceptors but no wastewater pump stations in the SE Lake Washington SPA. Figure 210-1 shows the King County facilities in the SPA. Wastewater facilities are located in King County's East Section service area, which contains approximately 90,000 sewered acres, extending from Juanita/Kirkland and Woodinville in the north to the Pierce/King County border. All East Section flow is treated at the South Treatment Plant in Renton. This section describes key King County facilities that serve the SE Lake Washington SPA, as well as issues and problems. It includes a table of pump stations relevant to regional service in this SPA.

WASTEWATER TREATMENT FACILITIES

There are no wastewater treatment facilities within the SE Lake Washington SPA.

CONVEYANCE FACILITIES

King County owns and maintains approximately 19,500 linear feet of sewers within the SE Lake Washington SPA. The Coal Creek Interceptor is about 7,200 linear feet and is located in the Coal Creek Utility District (formerly Water District 107). Approximately 12,300 linear feet of the Eastside Interceptor Sections 5 through 8 are within the Southeast Lake Washington SPA.

PUMP STATIONS

There are no regional pump stations in the SE Lake Washington SPA. Table 220-1 lists and describes the major local pump stations relevant to regional sewer service.

COMPARISON TO 1958 PLAN

Existing King County facilities have been built according to the sewer comprehensive plan defined by the *1958 Metropolitan Seattle Sewerage and Drainage Survey* and subsequent amendments adopted by resolution. The Coal Creek and May Creek Interceptors have not been extended as far east as anticipated by the 1958 Plan. It is unlikely that the May Creek Interceptor will be built due to environmental constraints.

King County Conveyance System Improvements
Final Task 220 Report—Existing Facilities

Table 220-1. Pump Stations Significant to Regional Sewer Service in SE Lake Washington SPA

Name (Number) and Location	Type of Station	Number of Pumps	Pump Rate (gpm)	Pump Size	Force Main Size	Destination	Emergency Power	Year Built	Remarks	TDH (feet)
<u>BELLEVUE</u>										
Newport Pump Station 73 Skagit Key		2				Eastside Interceptor	Onsite	Undetermined		
Newport Lift Station 68 Cascade Key		2				Eastside Interceptor	Onsite	Undetermined		
Bagley Pump Station 4425 Lk Washington Blvd SE		2				Eastside Interceptor	Portable	Undetermined	Upgraded	
Pleasure Point Pump Station 5666 Pleasure Pt Rd SE		2				Eastside Interceptor	Portable	Undetermined	Upgraded	
<u>COAL CREEK UD</u>										
Kimberlee Park P.S. SE 56th & 110th SE			350	40 hp	8" 1,000 LF	Eastside Interceptor	Portable	1973	Rebuilt in 1993	160'
Gaupholm P.S. 116th PI SE & SE 49th St			120	7.5 hp	4" 300 LF	Eastside Interceptor	Portable	1959	Upgraded in 1965; Replaced in 1986	63'
Olympus P.S. Coal Creek Parkway & SE 83rd St.			350	25 hp	8" 2,400 LF	Coal Creek Interceptor	Onsite	1986	Proposed upgrade to 800 gpm (1988)	72'
ULID 7-S SE 62 nd Street & 108 th Ave SE			60	7.5 hp	2.5" 980 LF		Portable	1999		150
Pleasant Cove SE 80 th St & 118 th Ave. SE			50	3.0 hp	2" 455 LF		Portable	1997		54
Middle May Creek P.S. SE 88 th St and SE 89 th PI			85	7.5 hp	3" 920 LF	Coal Creek Interceptor	None	1992		120
Upper May Creek LS SE May Valley Road and 135 th Ave SE									No information on LS included in the Coal Creek 2002 Comp Plan.	
<u>CITY OF RENTON</u>										
Stonegate Lift Station 5610 NE 26th St	Wet well mounted	2	140	20 hp	4" 1300 LF	May Creek Interceptor	Portable	1996		125'
Summer Wind Lift Station 5214 NE 23rd Ct	Wet well mounted	2	375	25 hp	6" 1065 LF	May Creek Interceptor	Portable	1987	Rehabilitation proposed	133'

LF = Linear Feet

LS = Lift Station

ULID = Utility Local Improvement District

PS = Pump Station

LOCAL FACILITIES

There are no local wastewater treatment facilities in the SE Lake Washington SPA. All wastewater is conveyed to the South Treatment Plant at Renton. This section describes Bellevue, Renton, and Coal Creek UD facilities within the SE Lake Washington SPA. It notes discrepancies between local planning and other planning records described in the Task 210 report. All the local service providers require testing and video inspection of all new sewers before the project is accepted and placed in service.

BELLEVUE

The following information is from the *City of Bellevue Comprehensive Wastewater Plan* (Bellevue, 2002) and *City of Bellevue Comprehensive Sewer Plan - Addendum Number 1 - Eastgate Comprehensive Sewer Plan* (CHS Engineers, Inc., 1995)

Figure 210-8 shows the city boundaries, local service areas, pump stations, and sewers for the City of Bellevue. Only the south portion of Bellevue is included in the SE Lake Washington SPA. Land use in the service area is governed by the City of Bellevue.

CONVEYANCE FACILITIES

Bellevue owns and maintains approximately 485 miles of sewer mains serving fifty-two sewer basins. Bellevue's Newport (36), Coal Creek (37), Somerset (40), and Metro (58) basins are within the SE Lake Washington SPA. Pipe material was not reported for Bellevue. Newport basin flow is routed to the Eastside Interceptor. All other local basins are routed to the Coal Creek Trunk.

PUMP STATIONS

See Table 220-1 for details on Bellevue pump stations relevant to the SE Lake Washington SPA. There are thirty pump stations in the service area and four are within the SPA. The four pump stations and one flush station are located on the shores of Lake Washington. Flow is pumped to the Eastside Interceptor upstream of the County's Hazelwood Tunnel.

KNOWN REHABILITATION REQUIREMENTS

The 2002 sewer comprehensive plan identified ongoing capital projects for sewer pump station improvements, sewer system trunk rehabilitation, and minor sewer capital improvement projects but did not describe specific projects within the Southeast Lake Washington SPA. The 1995

addendum included a capital improvement project for inflow and infiltration analysis that identifies rehabilitation projects, if appropriate.

PLANNED SYSTEM CHANGES

The 1995 addendum reported that Bellevue assumed all assets and operation of the Eastgate Sewer District. In the SE Lake Washington SPA, the addendum recommended construction of a gravity sewer bored crossing of Interstate 405 to route flow from the area between Interstate 405 and the Burlington Northern Railroad to the west. Construction of sewers to expand the system within the current service area was recommended, as needed.

OPERATION AND MAINTENANCE

According to the 2002 comprehensive plan, the operation and maintenance division operates and provides preventive system maintenance and monitors infrastructure to prevent system failures and maximize the life of the system components. An annual maintenance plan describes the tasks and frequency to be performed in that year. Preventive maintenance includes regular inspection and maintenance and scheduling of repairs or additional maintenance to address specific problems. The inspection and cleaning schedule for each pipeline depends on the history of problems and the associated criticality of the sewer. A fats, oils, and grease program is in place to reduce problems associated with these wastewater constituents.

COMPARISON TO 1958 PLAN

Existing King County facilities have been built according to the 1958 Plan and amendments subsequently adopted by resolution. The existing Coal Creek Interceptor represents only about one-fourth of the interceptor length proposed by the 1958 Plan.

COAL CREEK UD

The following information is from the *Coal Creek Utility District 2002 Interim Comprehensive Sewer System Plan* (Pace, 2002) and the King County GIS database (2003).

Figure 210-8 shows the city boundaries, local service areas, pump stations, and sewers for the Coal Creek UD. Most of the Coal Creek UD is included in the SE Lake Washington SPA. Land use in the planning area is governed by Newcastle, Bellevue, and King County.

CONVEYANCE FACILITIES

Coal Creek UD maintains approximately 52 miles of 8-inch and larger sewer mains, nearly one mile of force mains, and five sanitary sewer lift stations. The district serves approximately 4,950 equivalent residential units and has approximately 4,100 connections. An equivalent residential unit converts the impervious area of a non-residential property to a residential dwelling unit value. No conversion values were presented in the 2002 Coal Creek Comprehensive Plan. Pipe materials are constructed of concrete, asbestos cement, vitrified clay, ductile iron, and polyvinyl chloride.

Coal Creek UD flow leaves the district through the Coal Creek and Eastside Interceptors. Flow from the westerly basin enters the Eastside Interceptor through a 125 foot, 8-inch diameter drop connection to the Hazelwood Tunnel near 114th Avenue SE and SE 56th Street. Other flow is routed through the Coal Creek Trunk to the Eastside Interceptor.

PUMP STATIONS

See Table 220-1 for information on Coal Creek UD pump stations relevant to the SE Lake Washington SPA. The district seven pump stations and four are within the SE Lake Washington SPA. The district is proposing three new lift stations shown in Figure 210-8.

KNOWN REHABILITATION REQUIREMENTS

The sewer comprehensive plan recommends a district wide sewer system for grouting and repair. This will restore structural integrity to portions of the system and minimize inflow and infiltration.

PLANNED SYSTEM CHANGES

Within the planning area, the sewer comprehensive plan recommended construction of Lake Boren lift station number one and two, Lower May Creek lift station and force main, and abandonment of the Gaupholm and Pleasant Cove lift stations. The plan recommends relocating the Olympus lift station and replacing/relocating the station's force main. The plan recommends replacement of the Canyon Creek interceptor and a new May Creek sewer bridge crossing. The plan also recommends adjusting manhole lids and monitoring the Newport Hills Interceptor.

OPERATION AND MAINTENANCE

The preventative maintenance in the Coal Creek UD includes; identifying all possible hazards, identifying all potential failures while they are still in their development phases, prioritizing and scheduling maintenance activities, maintaining lift stations twice per week, scheduling field and

video inspections of the entire system including lines and manholes, and attending workshops and seminars to enable maintenance personnel to learn up-to-date techniques and material.

COMPARISON TO 1958 PLAN

Existing King County facilities have been built according to the sewer comprehensive plan defined by the 1958 Plan and amendments subsequently adopted by resolution. The existing Coal Creek Interceptor represents only about one-fourth of the interceptor length proposed by the 1958 Plan. The eastern part of the basin routed to May Creek in 1958 has been diverted north by local agency pump stations to the Coal Creek Interceptor.

RENTON

The following information is from the *Long-Range Wastewater Management Plan, A Comprehensive Sewer System Plan – 1998 Draft* (City of Renton, 1999) and the *City of Renton Infiltration /Inflow Program* (Brown and Caldwell, 1995), in addition to information provided by King County.

Figure 210-8 shows the city boundaries, local service areas, pump stations, and sewers for the City of Renton. Only a small area of the northeast portion of Renton is included in the SE Lake Washington SPA. Land use in the planning area is governed by the City of Renton.

CONVEYANCE FACILITIES

Approximately 158 miles of gravity sewers and force mains in Renton collect flow. Renton also contains seven major basins. Part of Renton's May Valley and Lake Washington East basins are within the SE Lake Washington SPA. Flow is discharged to County facilities at 67 locations within the City. Sewers are primarily 8-inch diameter but include pipes sized from 6-inch to 24-inches. Renton serves approximately 94% of its population through about 11,129 connections. Sewers are generally concrete or PVC.

The northeast Renton service area within the Southeast Lake Washington SPA showed a moderately high response to rainfall. For instance, 50 to 60 percent of the estimated year 1990 peak hour flow rate of 1.09 mgd was predicted to come from inflow sources.

PUMP STATIONS

Table 220-1 shows details on Renton pump stations relevant to the SE Lake Washington SPA. The district has twenty-one pump stations but only two are within the Southeast Lake Washington SPA.

KNOWN REHABILITATION REQUIREMENTS

The City proposes one rehabilitation project within the SE Lake Washington SPA. Summerwind Lift Station is scheduled for rehabilitation in 2012.

PLANNED SYSTEM CHANGES

The wastewater management plan recommended construction of about 13,500 linear feet of 24-inch gravity sewer approximately in the alignment of the 1958 plan extension of the May Creek Interceptor. It states that the construction of this sewer is required to complete Renton's Honey Creek Interceptor and eliminate the need for the Devil's Elbow Lift Station. It acknowledges that construction of this interceptor faces environmental and regulatory challenges and construction is not scheduled within the six-year time frame of the plan. If the interceptor is constructed, portions of the Southeast Lake Washington SPA currently pumped north could be routed south by gravity.

OPERATION AND MAINTENANCE

According to the 1998 wastewater management plan, procedures have been established for routine and emergency operations. Preventive maintenance consists of planned and scheduled activities that meet or exceed manufacturer's recommendations for all critical components. Periodic maintenance schedules are defined for lift stations and wells. All new sewers are video inspected before acceptance.

COMPARISON TO 1958 PLAN

The 1958 Plan and amendments subsequently adopted by resolution recommended that the existing May Creek Interceptor extend east to serve May Valley. Since it is unlikely that it will be extended due to environmental constraints, flow from the 1958 sewerage areas has been directed north to the Coal Creek Interceptor. It may be possible to route additional area in the southeast corner of the Southeast Lake Washington SPA north to eliminate one or two local pump stations.

**KING COUNTY CONVEYANCE SYSTEM
IMPROVEMENT PROJECT**

**SE LAKE WASHINGTON SUBREGIONAL
PLANNING AREA**

FINAL TASK 230 REPORT

EXISTING CONDITIONS

July 2003



KING COUNTY

INTRODUCTION

This section characterizes the physical and natural environment, known sensitive areas, and the general natural resources located in the SE Lake Washington Subregional Planning Area (SPA). This planning and project identification effort includes a description of geological, physical, biological, and other environmentally sensitive conditions in the planning area that may affect construction of conveyance systems to extend current service capabilities. Current and future land use and growth conditions in the planning area are also briefly identified. Information used to prepare this report includes relevant data from the cities of Bellevue, Renton, and Newcastle; the Coal Creek Utility District; King County; Puget Sound Regional Council; and consultant reports.

NATURAL ENVIRONMENT

King County requires protection of the natural environment and public health and safety in the county through its environmentally sensitive areas regulations (King County, 2002). The sensitive areas regulations contain development standards regarding wetlands; streams; erosion, flood, and seismic hazard areas; and other environmentally sensitive areas. Figure 230-1 shows sensitive areas within the SE Lake Washington SPA. Local jurisdictions in King County are also required to develop and implement sensitive areas ordinances within their municipal boundaries. Wastewater system planning and construction of conveyance systems and facilities in the SE Lake Washington SPA must occur in accordance with the requirements of these regulations and ordinances.

A summary of sensitive areas and other natural resources identified by King County in the SE Lake Washington SPA are discussed in the sections below.

GEOLOGICAL FEATURES

TOPOGRAPHY AND SOILS

The SE Lake Washington SPA is located in the Coal Creek and Newport Hills area of Bellevue, Renton, and Newcastle in the hills east of Lake Washington. The topography of the planning area includes portions of relatively flat to moderately sloping uplands, moderate to steep hillslopes, and the relatively flat creek valleys. Most of the drainage system has low gradient slopes. The western half of the study area is gently rolling glaciated upland, referred to by the Coal Creek Utility District as Newport Hills. This area is of moderately low relief, with elevations ranging from 300 feet in the north to 600 feet in the south (Penhallegon, 2002). The upland is bordered by relatively steep valley sides sloping down to Coal Creek on the north and northeast, May Creek on the south, and Lake Washington on the west.

The northwest part of the planning area is flat, especially in the north Coal Creek Utility District area. The rest of the planning area around Newcastle, Bellevue, and the southeast Coal Creek Utility District area is relatively steep. Topography rises steeply to a plateau on the east side of the planning area, south of Coal Creek Road. Near the eastern end of Coal Creek Parkway and the upper reaches of Coal Creek, elevations are significantly higher than the western portion of the planning area. In the central portion of the planning area, topography changes from relatively flat land near Lake Boren to a steep gradient, which rises to a plateau on the east side of the lake.

The part of the study area on the east side of Lake Boren is of high relief, reaching over 1,000 feet in elevation. Hills on the east side of Lake Boren are composed of bedrock, resulting in the formation of steep ridges (Penhallegon, 2002).

The dominant soil association found within the SE Lake Washington SPA is the Beausite Alderwood Association (USDA, 1973). This type of soil is well drained to moderately well

drained, and gently rolling to very steep. At a depth of 20 to 40 inches, these soils consist of shale sandstone or dense, permeable glacial till (Penhallegon, 2002). Also found in the planning area is the Alderwood Association, located in the northwest portion of the area, and the Everett Association, located in the southwest corner of the SPA near the mouth of May Creek. The Alderwood soil series is the most common soil type in the SPA. This soil series includes moderately well-drained, gravelly sandy loams that are 24 to 40 inches deep over consolidated glacial till. The Everett series is the next most prevalent soil type in the area, but is much less common than the Alderwood series. Everett soils are gravelly and are underlain by sand and gravel.

Bedrock on the eastern portion of the planning area is composed of sandstone, siltstone, and volcanic rock. These rocks are well lithified and have low permeability rates. Except where it is exposed, the bedrock is mantled by a thin layer of soil or covering of glacial deposits. Volcanic bedrock is exposed in small hills near the Newport Hills upland (Penhallegon, 2002). The western portion of the planning area is comprised of glacially shaped soils that form plateaus atop steep slopes and wide, flat valleys.

Planning area geology and soils, including seismic, landslide, and erosion hazard sensitive areas, are shown in Figure 230-2.

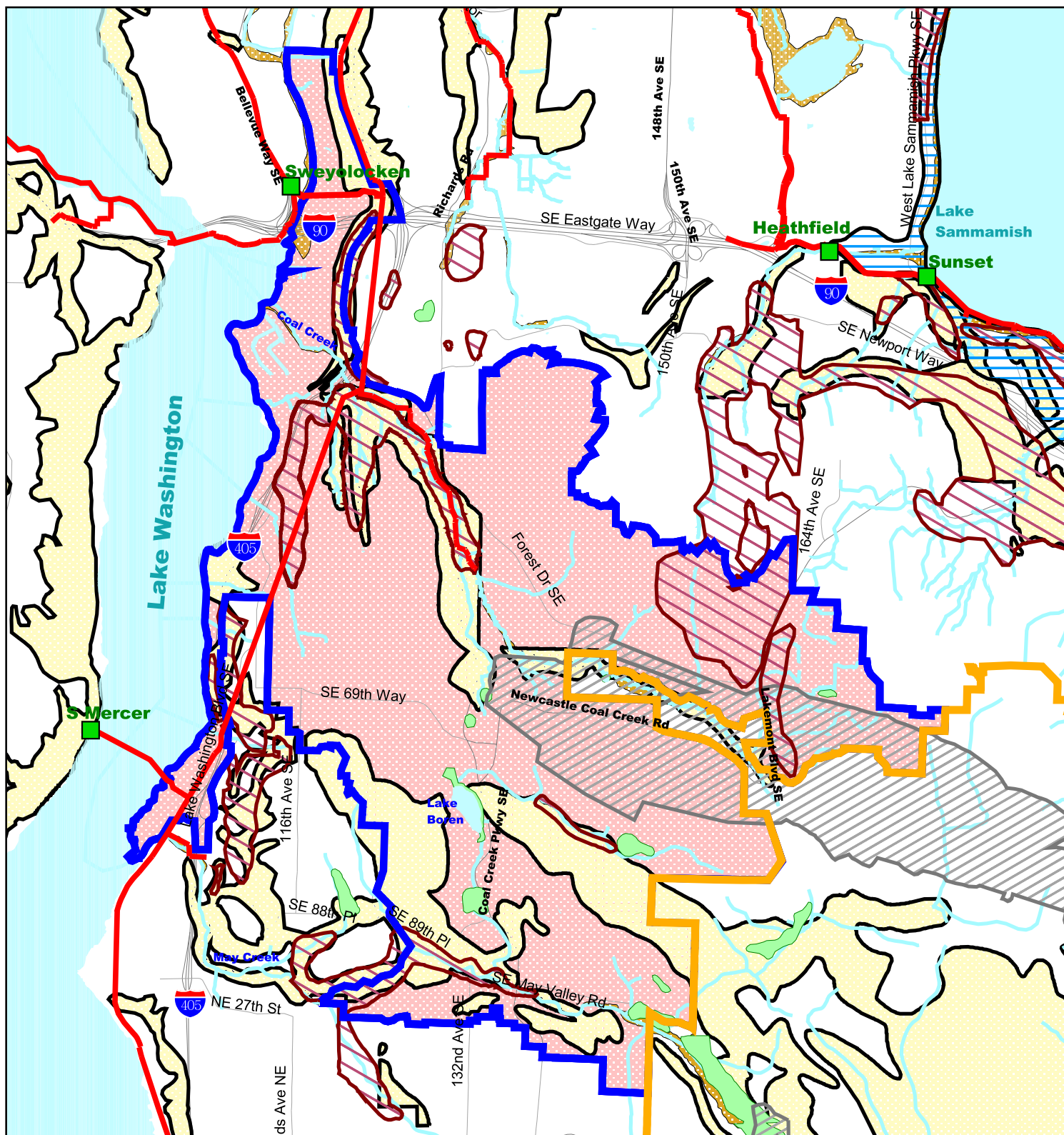
EROSION HAZARDS

The susceptibility of any soil type to erosion depends on the physical and chemical characteristics of the soil, its vegetative cover, slope length and gradient, intensity of rainfall, and the velocity of surface water runoff. Seven erosional hazard sensitive areas have been identified by King County within the SPA (King County, 1997). The city of Renton has also identified erosion as a natural hazard in the planning area (Renton, 1993). The walls of the plateaus and river valleys throughout Renton generally have steep and erosive conditions. Due to the high annual rainfall and soil conditions, erosion occurs on level areas as well as on steep slopes (Renton, 1993).

Erosional hazard areas are concentrated around the two main water bodies within the SPA: Coal Creek and May Creek.

The Coal Creek mainstem and the lower portion of the west fork of Coal Creek are identified by King County (1997) as high erosion hazard areas. These hazard areas extend to just north of Coal Creek Road, in the middle region of the SE Lake Washington SPA.

Coal Creek has extensive sedimentation problems, which are caused mainly by streambank erosion, the failure of tailing slopes from old coal mining activities and landslides of the steep slopes above the creek (Renton, 1993). Sturtevant (2000) estimated that the city of Bellevue removes an average of 1,900 cubic yards of sediment annually from sediment ponds in Coal Creek.



**Figure 230 - 1: SE Lake Washington
Subregional Planning Area
Sensitive Areas**

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SE Lake Washington\selake_wa_task230.apr



King County



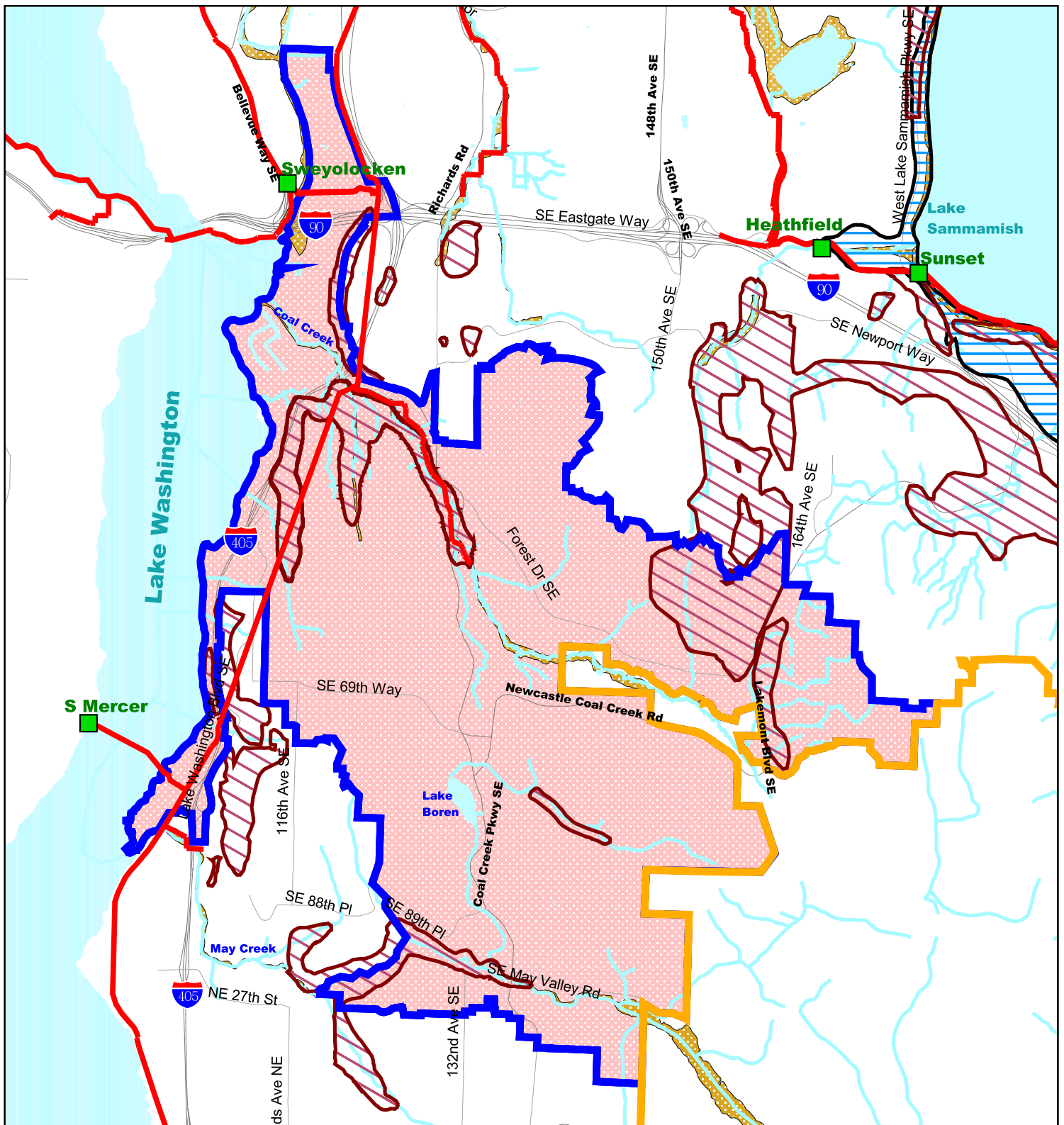
0.2 0 0.2 0.4 0.6 0.8 Miles

July 28, 2003

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Legend

- KC Pump Stations
- KC Conveyance Lines
- 2002 UGA Boundary
- ▨ Slide Hazard
- ▨ Seismic Hazard
- ▨ Coal Mining Area
- Wetland
- Stream
- ▨ Erosion Hazard
- Streets
- ▨ Flood Plain
- SE Lake Washington Basin



**Figure 230 - 2: SE Lake Washington
Subregional Planning Area
Geology and Soils**

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SE Lake Washington\lake_wa_task230.apr



King County



July 28, 2003

0.2 0 0.2 0.4 0.6 0.8 Miles

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Legend

- KC Pump Stations
- KC Conveyance Lines
- 2002 UGA Boundary
- ▨ Slide Hazard
- ▨ Seismic Hazard
- Stream
- Streets
- ▨ Flood Plain
- SE Lake Washington Basin

Much of the erosion and sediment transport in May Creek is a result of development (King County, 2001a), which has occurred throughout the southern portion of the planning area. Sediment deposition in the creek valley has occurred from natural erosion, but has been accelerated by increased storm flows from development and changes in local land cover. The King County Sensitive Areas Ordinance (SAO) identifies extensive erosion hazard areas within the May Creek basin, extending from the western planning area boundary east towards Lake Boren (see Figure 230-2). Another erosional hazard area was identified on the east side of Lake Boren, extending east beyond the planning area boundary (King County, 1997).

Activities associated with clearing, grading, and construction can potentially contribute to erosion and sedimentation. Proper erosion and sedimentation control measures should be implemented during construction activities to minimize construction impacts. Following construction, the disturbed site should be stabilized and revegetated, and drainage systems should be installed to further minimize any long-term erosion and sedimentation and related impacts.

LANDSLIDE HAZARDS

Landslide hazard areas have slopes greater than 15 percent, impermeable soils, and ground water seepage. Areas with a history of rapid stream incision, stream bank erosion, or undercutting by wave action, as well as areas with a geological history that would indicate landslide susceptibility, are also designated as landslide hazard areas.

Coal Creek has extensive sedimentation problems due to erosional slides (Kerwin, 2001). Sources of these sediments include eight slide or large erosion areas within the area between Coal Creek Parkway and the cinder mines, which are located in Cougar Mountain Park, near the Red Town Trailhead (Kerwin, 2001; King County, 1997). In addition, mine tailings deposited on floodplain terraces during high flows remain a large sediment source in the Coal Creek basin (Kerwin, 2001).

Landslide hazard areas are scattered in small patches around the lower portions of Coal Creek and May Creek (see Figure 230-2). Landslide areas were also identified by King County (1997) along the west portion of the SPA, located west of Lake Boren within the north portion of the May Creek basin. One landslide area was also identified on the east side of Lake Boren.

SEISMIC HAZARDS

Seismic hazard areas are subject to severe risk of earthquake damage because of settlement or soil liquefaction. These conditions occur in areas underlain by soils with low cohesion and density, and are usually associated with a shallow ground water table. When shaken by an earthquake, these soils can lose their ability to support loads. Loss of soil strength can result in failure of the ground surface and damage to or collapse of structures supported in or on the soil. Loose, water-saturated soil materials are the most susceptible to ground failure due to earthquakes.

No areas with a high risk of seismic hazard were identified by King County (1997) or by the city of Renton (1993) as occurring within the SE Lake Washington SPA.

WATER FEATURES

Rivers, lakes, streams, wetlands, and other surface water bodies and features are located throughout the SE Lake Washington SPA. Surface water features identified by King County within the SE Lake Washington SPA are shown in Figure 230-3 and discussed briefly below.

SHORELINE AND SENSITIVE AREA REGULATION OF WATER BODIES

The SE Lake Washington SPA is within the cities of Renton, Bellevue, and Newcastle, and within the Coal Creek Utility District.

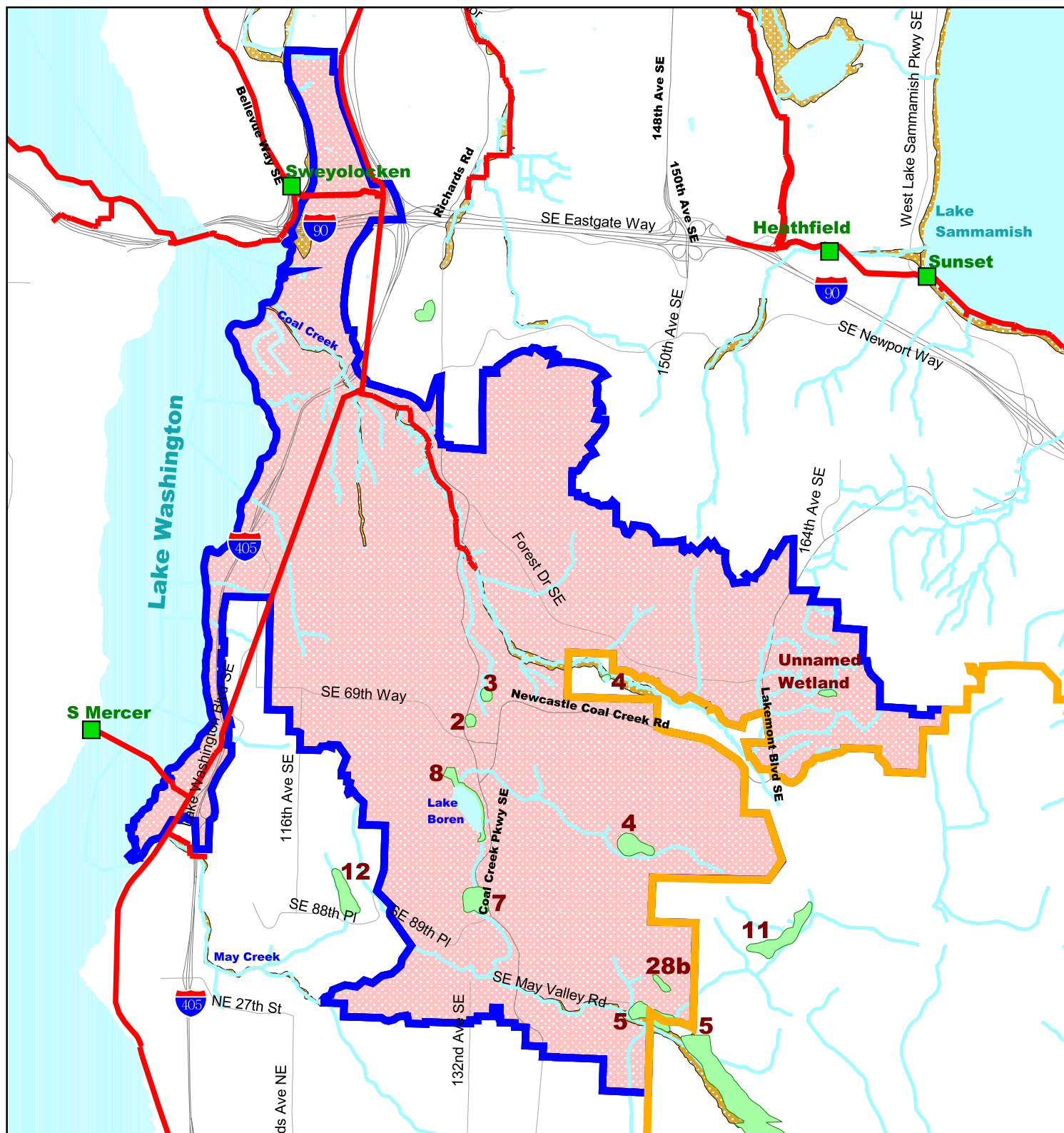
Coal Creek, May Creek, and Lake Boren are classified as “shorelines of the state” under the Washington Shoreline Management Act (RCW 90.58), as well as under local shoreline master programs. Any alteration of a shoreline of the state must be consistent with the local jurisdiction’s shoreline master plan. The shoreline regulations that apply to these areas vary by location and jurisdiction, but they generally discourage development close to shorelines where alternative locations can be used.

Coal Creek and May Creek, as tributaries to Lake Washington, are classified as Class AA “Extraordinary” by Ecology in terms of domestic and industrial water supply, fish and shellfish (rearing, spawning, and harvesting), wildlife habitat, swimming, and boating. The creeks are rated as Class 1 under the King County Sensitive Area Ordinance (King County, 2002). Development within 100 feet of these shorelines is generally prohibited or severely restricted in the unincorporated areas of King County.

DRAINAGE BASINS AND STREAMS

Within the SE Lake Washington SPA, there are two main streams, with their respective drainage basins: Coal Creek in the north portion of the SPA and May Creek in the south portion. The East Lake Washington drainage basin is located along the west side of the planning area (Figure 230-4). Coal Creek and May Creek are low gradient streams that have been altered by development in the region. Development has increased the percentage of impervious surfaces, altered hydrologic regimes, caused loss of floodplain connectivity, caused poor riparian conditions, and impaired water quality (Kerwin, 2001). Both streams are dependent on rainfall and groundwater (rather than on snowpack).

The Coal Creek drainage basin is in the north section of the planning area, north of Coal Creek Road. The Coal Creek basin is approximately 5,820 acres in area, with an estimated impervious



**Figure 230 - 3 : SE Lake Washington
Subregional Planning Area
Surface Water and Wetlands**

q:\lwtd\projects\CSI project
SE Lake Washington\selake_wa_task230.apr

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King County

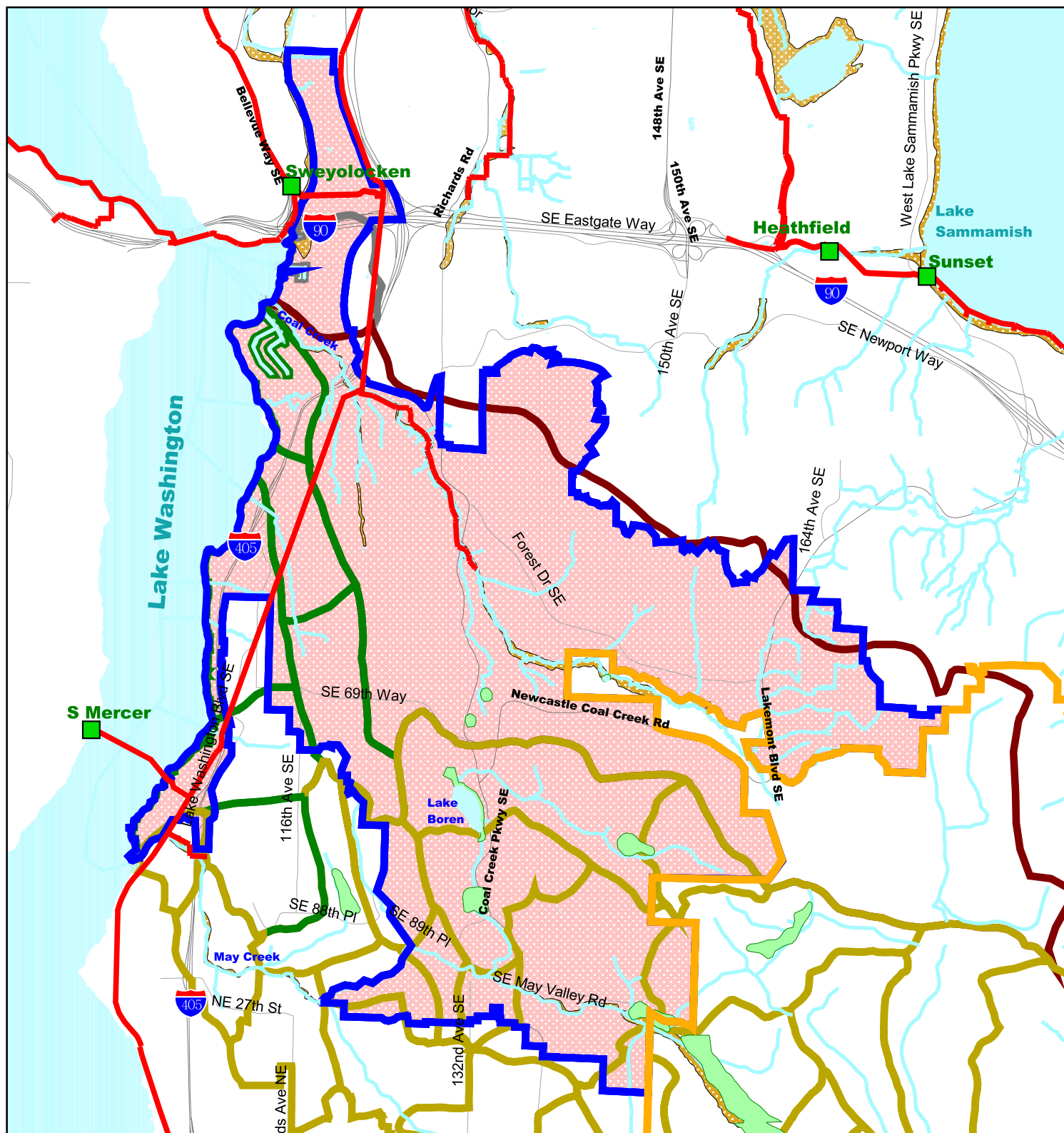
0.2 0 0.2 0.4 0.6 0.8 Miles



July 28, 2003

Legend

- KC Pump Stations
- ↗ KC Conveyance Lines
- ▬ 2002 UGA Boundary
- Wetland
- ▬ Stream
- ▬ Streets
- ▨ Flood Plain
- ▬ SE Lake Washington Basin



**Figure 230 - 4: SE Lake Washington
Subregional Planning Area
Drainage Basins**

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0.2 0 0.2 0.4 0.6 0.8 Miles



July 28, 2003

Legend

- KC Pump Stations
- KC Conveyance Lines
- 2002 UGA Boundary
- Wetland
- Stream
- Drainage Basins**
 - Coal Creek (Cedar)
 - E Lk WA - Bellevue Middle
 - E Lk WA - Bellevue South
 - May Creek
 - Streets
 - Flood Plain
 - SE Lake Washington Basin

surface area of 21 percent (Bellevue, 2000). Coal Creek and other unnamed tributaries are the only major surface water features in this basin.

Extensive coal mining activities took place in the basin beginning in the late 1800s. The mining activities resulted in changed stream courses, channelized reaches, and mine tailings dumped along streambanks (McDonald, 1987; Kerwin, 2001). Urban development within the Coal Creek basin more recently has further altered the creek's natural hydrologic characteristics, increasing the frequency, duration, and peak of flood events, streambank erosion, and streambed sedimentation (Kerwin, 2001).

The headwaters of Coal Creek originate in the steep terrain of Cougar Mountain, at an elevation of approximately 1,400 feet. The creek flows for approximately 7 miles through a series of steep, narrow ravines before entering Lake Washington at Newport Shores. The lower portion of Coal Creek near the outlet of the stream has been altered, including diverting the channel southward in 1940, then northward in 1950, then excavating two canals to connect interior lots to Lake Washington (Kerwin, 2001).

Water quality in Coal Creek was characterized as good during late 1980s monitoring studies conducted by King County (Metro, 1994). The creek continues to have one of the highest mean dissolved oxygen concentrations and lowest mean temperatures of all the streams in the County sampling program. High pH values and conductivity have been attributed to the sandstone bedrock in the basin. Currently, Coal Creek has lower than average nutrient concentrations (King County, 2003).

Benthic invertebrates are used as an indicator of ecosystem health by King County because invertebrates have varying sensitivities to pollution. In a 1999 Bellevue study, Coal Creek showed that water quality impacts have been observed, but the benthic invertebrate community was only mildly degraded, indicating that water quality is not likely significantly affecting the biota (Kerwin, 2001).

The May Creek basin encompasses an area of 14 square miles that drains to the southeast portion of Lake Washington. Two lakes are located within the basin: Lake Kathleen in the southeast portion of the basin and Lake Boren in the northwest portion of the basin. Lake Kathleen is outside of the SE Lake Washington SPA, and will therefore not be discussed further in this report. Lake Boren is discussed below.

The May Creek basin lies in the south section of the SPA, north of Renton in west central King County. Water drains into May Creek from the south, flowing west to Lake Washington. May Creek is a 7-mile-long stream that originates in the steep forested slopes of Cougar and Squak Mountains and in the highlands of the Renton Plateau (King County, 2001b). May Creek Valley is a natural floodplain and historically has experienced periodic and sometimes extensive flooding (King County, 2001a). May Creek is ranked between moderately impacted rural and intensely impacted (Kerwin, 2001). It is ranked high for peak flow, medium for storm volume, and low for base flows (King County 2001a). The East Lake Washington drainage basin is in the western part of the SPA, approximately west of SE 119th Street. This portion of the planning

area along the eastern shore of Lake Washington drains naturally into the lake. No other significant surface water features are present within this portion of the SPA.

LAKES

Lake Boren is approximately 30 feet deep and 20.2 acres in size. Lake Boren is located near the intersection of Coal Creek Parkway and SE 72nd Street. The lake exhibits flooding at its outlet and sediment accumulation problems at its inlet. Lake Boren and its associated wetlands' water quality has been impacted by runoff from urbanization and construction activity in the China Creek catchment, and in areas that drain directly to the lake (King County, 2001a). High readings of fecal coliform and phosphorus have led to regular algae blooms in the lake (Metro 1994).

Cloudiness in the lake has increased during winter months due to high sedimentation. Water quality data collected between 1988 and 1992 indicated high levels of fecal coliform and nutrients that are discharged into the lake by China Creek (King County, 2001a). As residential development continues to increase around the lake and along the China Creek shoreline areas, water quality conditions are expected to worsen, threatening such recreational activities as fishing and swimming in Lake Boren Park (King County, 2001a).

King County recommends that areas draining to Lake Boren should continue to be governed by a Level 3 (lake protection) standard, which is intended to limit future increases in lakeshore flooding for all events through the 100-year flood (King County, 2001a).

WETLANDS

Wetlands are unique environments, comprising diverse terrestrial and aquatic habitats. Biological habitat support refers to a wetland's provision of nesting, breeding, rearing, and feeding habitat for aquatic and terrestrial wildlife species. Wetlands and wetland systems within the SE Lake Washington SPA offer habitat for wildlife and wetland-dependent plant and animal species. A wetland's size, connection to other wetlands and water bodies, water quality, diversity of habitat, and habitat structure affect its performance and function. Building in wetlands and in established wetland buffers is restricted and requires approvals and permits from the local jurisdiction and possibly the U.S. Army Corps of Engineers.

Wetlands within the SE Lake Washington SPA have been modified by human activity, including clearing, grading, draining, filling, and conversion to stormwater detention facilities (Brown and Caldwell, 1997). Wetlands remaining in the portion of the May Creek basin within the SE Lake Washington SPA include shrub or grass-dominated wetlands, deciduous riparian zones in the lower May Creek canyon, deciduous forested/shrub-scrub, and palustrine emergent wetlands along Coal Creek Parkway (Brown and Caldwell, 1997).

The King County Sensitive Areas Database (1997) shows a total of nine disconnected wetlands of various small sizes located within the SPA, in addition to the water bodies identified in the

previous sections. No wetlands along Coal Creek or within its drainage area were identified within the SE Lake Washington SPA (King County, 1997). The largest wetland concentration is located in the May Creek basin. These wetlands are shown in Figure 230-3.

There are three small wetlands within the SPA (Coal Creek wetlands 2 and 3 and an unnamed wetland), which are within the identified erosional hazard zone in the Coal Creek basin (King County, 1990;1997). These wetlands do not appear to be associated with Coal Creek, but they may be hydrologically connected to the creek. These wetlands are within the city of Newcastle, and are designated as Class 1 palustrine forested and palustrine shrub-scrub, and Class 2 palustrine emergent wetlands.

Six wetlands are associated with May Creek (May Creek wetlands 4, 5, 7, 8, 12, and 28b), one of which is the Lake Boren water body (King County, 1990). These wetlands likely provide wildlife habitat for species along the May Creek corridor and Lake Boren areas.

FLOOD HAZARD AREAS

Flood hazard areas of King County are those areas subject to inundation by the 100-year flood. These are areas that have a 1 percent probability of inundation in any given year. Streams, lakes, wetlands, and closed depressions all have floodplains that may qualify as flood hazard areas (King County, 1997). Development in flood hazard areas is restricted or prohibited, depending on the type of flood area (e.g., flood fringe, zero-rise floodway, or Federal Emergency Management Agency [FEMA] floodways).

There are two major flood hazard areas in the SE Lake Washington SPA (King County, 1997). These areas are located along the west fork and mainstem of Coal Creek, and along the May Creek mainstem (see Figure 230-1).

The May Creek valley is a natural floodplain that has historically experienced periodic and extensive flooding (Kerwin, 2001). The density of upland development is a key contributing factor to the flooding that occurs in the May Valley. This problem has worsened as stream channelization and development in upland areas cause increased flows, and as natural deposition of sediments in May Valley continues to reduce the conveyance capacity of May Creek (King County, 2001a).

FISH AND WILDLIFE

Creeks, wetlands, and shoreline riparian vegetation in the SE Lake Washington SPA can provide wildlife corridors and habitat for small mammals, migratory waterfowl, perching birds, amphibians, snakes, and water-dependent species. These areas may also be important habitat for threatened and endangered species in the study area. However, land uses such as livestock pastures, plowed agricultural fields, and major highways around portions of some creeks in the SPA provide poor buffers around streams and wetlands. Some of these streams have culverted sections through urban or other developed areas that also divide and fragment their use as migration corridors.

Federal and state threatened, endangered, proposed, candidate, priority, and other species of concern are present in King County and can be found within the SE Lake Washington SPA. Fish species include chinook (*Oncorhynchus tshawytscha*), coho (*O. kisutch*), and sockeye (*O. nerka*) salmon; steelhead trout (*O. mykiss*), and bull trout (*Salvelinus confluentus*). Sea-run cutthroat trout (*O. clarki*), rainbow trout (*O. mykiss*), and many other species of resident fish can also be found in streams and lakes throughout the planning area. Kokanee (*O. nerka*) are not known to occur within the SE Lake Washington SPA (Seattle, 1998). The listing of certain Puget Sound area salmon and steelhead runs on the federal endangered species list requires that development around these water bodies be carefully planned and that detailed biological assessments be conducted identifying impacts on listed species and their habitat.

Substantial supplementation of coho salmon has occurred in the Coal Creek basin; however, the basin has very few returning adult salmon of any species (King County, 2001c; Kerwin, 2001). The Washington Department of Fish and Wildlife (WDFW) reported planting between 9,000-13,800 zero age coho into Coal Creek from 1994-1997. Coho, chinook, sockeye, and steelhead trout have also been noted in the basin (Kerwin, 2001). No salmonids were observed in Coal Creek during the 2000 Volunteer Salmon Watcher Program (King County, 2001c). In 2001, the coverage of Coal Creek by participants in the Salmon Water Program increased substantially (King County, 2002b), and volunteers observed two chinook salmon, 29 coho salmon, and nine sockeye salmon.

Both the Coal Creek and May Creek systems are classified by King County as Class 2 streams, with salmonids. None of the smaller streams in the SPA are identified as having salmonids present (King County, 1997.) Water temperatures are likely a limiting factor for the natural production of salmonids in Coal Creek (Kerwin, 2001).

The May Creek basin continues to provide high quality tributary habitat to the Lake Washington watershed; however, use of May Creek by salmon and other wildlife is declining due to habitat loss, erosion, sedimentation, and deteriorating water quality (King County, 2001a). May Creek also has forested, meadow, and shrub habitats that provide shelter and food for wildlife species. Despite the extensive development this creek basin has experienced, May Creek does provide salmonid habitat (Renton, 1993).

Amphibians of concern in the SE Lake Washington SPA may include the Cascades frog (*Rana cascadae*), red-legged frog (*R. aurora*), Oregon spotted frog (*R. luteiventris*), tailed frog (*Ascaphus truei*), western toad (*Bufo boreas*), Van Dyke's salamander (*Plethodon vandykei*), northwestern salamander (*Ambystoma gracile*), long-toed salamander (*Ambystoma macrodactylum*), Pacific giant salamander (*Dicamptodon tenebrosus*), Cascade torrent salamander (*Rhyacotriton cascadae*), western redback salamander (*Plethodon vehiculum*), and roughskin newt (*Tarichia granulose*). Reptiles of concern include the western pond turtle (*Clemmys marmorata marmorata*).

Birds of concern include the bald eagle (*Haliaeetus leucocephalus*), common loon (*Gavia immer*), harlequin duck (*Histrionicus histrionicus*), great blue heron (*Ardea herodias*), osprey (*Pandion haliaetus*), and willow flycatcher (*Empidonax traillii extimus*). Mammals of concern

include the northern water shrew (*Sorex palustris*) and masked shrew (*S. cinereus*) (Seattle 1999). The occurrence in the SE Lake Washington SPA of species generally found in old growth forest areas, such as northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), a variety of bat species, and others, is possible but not likely.

Land use practices have resulted in the following limiting factors (as identified by Kerwin [2001]) for salmonids within the SE Lake Washington SPA, and the Lake Washington watershed in general:

- Numerous known and unknown blockages are in place along Lake Washington tributaries, which eliminates habitat accessibility and prevents salmonid migration and spawning
- Pool habitat is limited with very few deep pools, off-channel habitat, or instream complexity
- Riparian cover and refugia habitat is lacking and little large woody debris is available
- Hydrologic connectivity to the floodplain has been degraded due to streambank hardening
- Riparian buffers are typically inadequate and are often fragmented
- Changes to the natural hydrologic regime are extensive
- There are high levels of impervious surfaces throughout the watershed.

VEGETATION

Within the Coal Creek basin, an estimated 15 percent of the 100-foot riparian area around the stream is impervious and devoid of vegetation (Bellevue 2000 unpublished data, as cited by Kerwin [2001]). Most of the urban encroachment is located near the mouth of the stream in the Newport Shores Development (Kerwin, 2001). Riparian vegetation within the Coal Creek basin consists primarily of mature deciduous trees, with big-leaf maple (*Acer macrophyllum*) and red alder (*Alnus rubra*) being the dominant species (Bellevue, unpublished data, 1996; 1998).

Within the May Creek basin, Brown and Caldwell (1997) identified four main vegetation types: mixed deciduous/coniferous upland forest, deciduous upland forest, riparian forest, and wetland vegetation. Forest species include Douglas fir (*Pseudotsuga menziesii*), black cottonwood (*Populus balsamifera*), big-leaf maple, western hemlock (*Tsuga heterophylla*), red cedar (*Thuja plicata*), and red alder, with an understory of vine maple (*Acer circinatum*), salmonberry (*Rubus chamaemorus*), Indian plum (*Oemleria cerasiformis*), and salal (*Gaultheria shallon*). The basin's residential and commercial developments are vegetated by Scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus discolor*), and various grasses (Brown and Caldwell, 1997) in open areas, and several species of ornamental varieties in yards and other landscaped areas within the SPA.

Non-native species that are introduced either accidentally or are intentionally planted as ornamentals can devastate natural communities, out-competing native species and altering their host habitats. Nine introduced, non-native plant species are known to be present in the Cedar – Sammamish Watershed. One of the most visible is the Eurasian watermilfoil (*Myriophyllum spicatum* L.), which was introduced into Lake Washington in the 1970's (Kerwin, 2001). Eurasian watermilfoil is a fast-growing plant that forms a dense canopy on the water surface. The plant can interfere with recreation, inhibits water flow, and can impede navigation (Newman, 2003). It is possible for this and other invasive plants not previously identified in the area to be present in the SE Lake Washington SPA.

LAND USE AND GROWTH

LAND USE

This section describes existing and potential changes in land use practices and forecasted growth within the SE Lake Washington SPA. This assessment is based on forecasted changes in population and the distribution of residential, commercial, and industrial development in the area. Planned sewerage conveyance systems are discussed in the comprehensive sewerage plans of the cities of Bellevue, Newcastle, and Renton, and the Coal Creek Utility District. Other existing and proposed land use information is also derived from these documents and the *King County Comprehensive Plan* (2000). Understanding these land use and growth areas within the SE Lake Washington SPA will help the county to plan for its sewer conveyance system requirements through the area. Figure 230-5 shows expected land uses under the 2000 King County Comprehensive Plan (King County, 2001b) (note that Figure 230-5 does not depict all currently projected uses within incorporated areas).

The Metropolitan King County Council established an urban growth area in the 1994 *King County Comprehensive Plan* and its 1995 amendments. The King County plan requires future growth and development to be confined to the urban growth area to limit urban sprawl, enhance open space, protect rural areas, and provide for more efficient use of human services, transportation, and utilities. The King County plan includes capital facilities and utilities elements that identify the county's current regional wastewater conveyance and treatment system and facilities. The plan also identifies a review and approval process for sewer plans within the county. Each local service agency in the SE Lake Washington SPA has developed and adopted sewer plans in accordance with the *King County Comprehensive Plan*. Incorporated cities in the planning area – Bellevue, Newcastle, and Renton – also have urban growth area boundaries within which development must be contained.

GROWTH

The Puget Sound Regional Council (PSRC) prepares long-range population, household, and employment forecasts for the four-county Puget Sound region (King, Kitsap, Pierce, and Snohomish counties). These forecasts are prepared to ensure a general consistency with local comprehensive plans developed under state Growth Management Act guidelines.

Local population forecasting is performed by first forecasting population, employment, and income for the Puget Sound region as a whole, then allocating these forecasts among small geographic areas, called forecast analysis zones (FAZs). Forecast analysis zones generally approximate existing boundaries, such as municipal jurisdictions and community planning areas, and are therefore useful in predicting growth in specific areas of the region. The forecast

analysis zones in which the SE Lake Washington SPA is partially or completely located are shown in Figure 230-6.

The central Puget Sound regional population was estimated to be 3.19 million people as of 1999. Growth in King County decelerated noticeably in 1999. The county gained only 11,200 persons (or 0.67%), to reach 1,677,000 during 1998-99, compared to an increase of 19,600 persons or 1.19% during the previous year (PSRC, 1999). However, several census tracts situated along or in close proximity to Interstate 405 and Interstate 90 corridors in Bellevue and Renton witnessed major population growth.

The central Puget Sound grew overall by 526,952 people (or 19.2%) between the 1990 Census and the 2000 Census, with a total population of 3,275,847 in 2000 (PSRC 2003). Bellevue grew by 22,695 (or 26%) residents between 1990 and 2000 (PSRC 2003), reaching a population of 109,569 in 2000. Newcastle was not surveyed in the 1990 Census (prior to its incorporation), but had a population of 7,737 in 2000. Renton grew by 8,364 people (or 20.1%) between the 1990 and 2000 censuses, reaching a population of 50,052 in 2000.

Expected growth in the SE Lake Washington SPA currently varies, but is substantial in some areas. Overall, forecast analysis zones covering the SE Lake Washington SPA (Figure 230-6) are expected to see an additional 10,894 households (a 33.5% increase), 12,006 new residents (a 14% increase), and 13,231 new jobs (an 81.7% increase) between 2000 and 2030 (PSRC 2003).

Projected household, population, and employment growth by forecast analysis zone in the SE Lake Washington SPA (PSRC, 2003) are shown in Table 230-1. The largest population and household increases (as a percentage) between 2000 and 2030 are expected to occur in the Renton Highlands, South Bellevue, and East Renton forecast analysis zones. Total employment percentages are expected to increase most in the Newport Hills, Renton Highlands, and South Bellevue forecast analysis zones.

Table 230-1. Current and Projected Household, Population, and Employment Growth by Forecast Analysis Zone in the SE Lake Washington SPA.

Forecast Analysis Zone	Total Households			Total Population			Total Employment		
	2000	2030	Growth	2000	2030	Growth	2000	2030	Growth
4120 Renton Highlands	7,322	10,578	44.5%	16,829	21,817	29.6%	2,497	4,517	80.9%
4210 East Renton	6,197	8,528	37.6%	15,622	19,187	22.8%	2,439	3,418	40.1%
4225 Cougar Mountain	4,135	5,433	31.4%	12,077	12,739	5.5%	1,158	1,412	21.9%
4226 Newport Hills	5,596	6,760	20.8%	15,525	15,472	-0.3%	1,279	8,051	529.5%
4505 South Bellevue	5,248	7,285	38.8%	16,611	18,789	13.1%	634	1,140	79.8%
4810 West Bellevue	4,009	4,817	20.2%	8,928	9,594	7.5%	8,192	10,892	33.0%
<i>Total Average Change</i>	<i>32,507</i>	<i>43,401</i>	<i>33.5%</i>	<i>85,592</i>	<i>97,598</i>	<i>14.0%</i>	<i>16,199</i>	<i>29,430</i>	<i>81.7%</i>

Source: Puget Sound Regional Council data (PSRC 2003).

The city of Bellevue generally relies on the latest Puget Sound Regional Council data in estimating future growth in the city. The city of Bellevue had a total of 109,569 residents in the year 2000 Census (WOFM, 2003), and is expected to grow by approximately 24.3% by the year

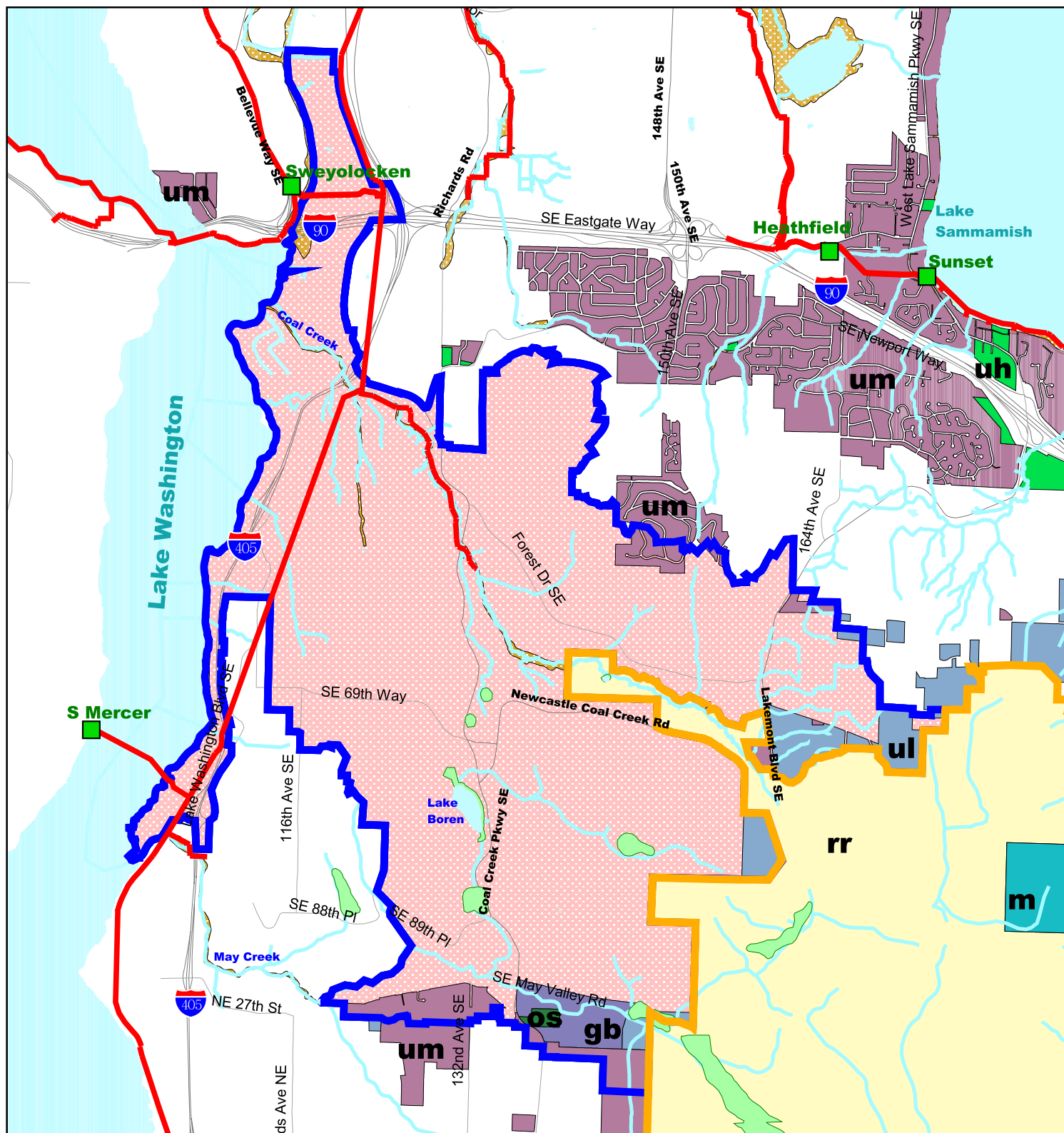


Figure 230 - 5: SE Lake Washington Subregional Planning Area
2002 Comp Land Use Plan

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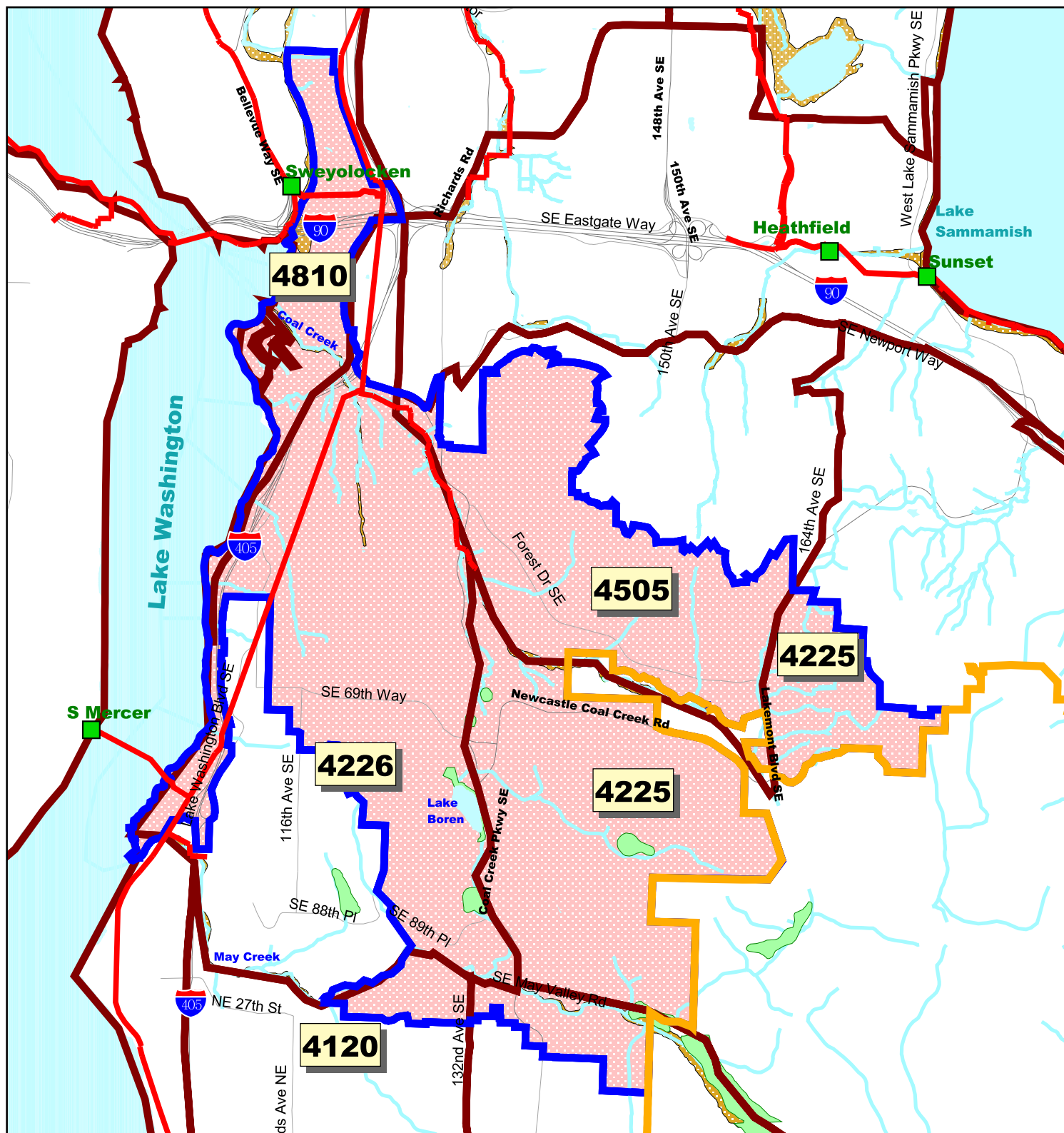
0.2 0 0.2 0.4 0.6 0.8 Miles



July 28, 2003

Legend

- KC Pump Stations
- KC Conveyance Lines
- 2002 UGA Boundary
- Wetland
- Stream
- Comp Plan Land Use 2002**
- gb-Greenbelt
- m-Mining
- os-Open Space
- rr-Rural Residential
- uh-Urban Res <12du/ac
- ul-Urban Res 1du/ac
- um-Urban Res. 4-12du/ac
- Streets
- Flood Plain
- SE Lake Washington Basin



**Figure 230 - 6: SE Lake Washington
Subregional Planning Area
Forecast Analysis Zones (FAZ)**

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King County



0.2 0 0.2 0.4 0.6 0.8 Miles

July 28, 2003

Legend

- KC Pump Stations
- KC Conveyance Lines
- 2002 UGA Boundary
- FAZ Boundary
- Wetland
- Stream
- Streets
- Flood Plain
- SE Lake Washington Basin

2030 (PSRC 2003). Only the FAZs within the SPA addressed in this report are shown in the table above.

Current land use in the Bellevue Regional Growth Center is mainly commercial (31%) and office (18%) (PSRC, 2002a). Nearly eight percent of the Bellevue Regional Growth Center (about 32 acres) is vacant land. Altogether, employment related land use comprises 54% of the center's land use. The City is currently updating and revising the downtown Bellevue plan, which will enable downtown Bellevue to evolve as a better regional growth center. The main updates are transportation, urban design, and public safety. Parks and open space make up five percent of the Bellevue land area, and multi-family residential accounts for five percent.

As of 2002, forty-five percent of the housing in Bellevue was multi-family, and ten percent of the community was dedicated to parks and open space (PSRC, 2002a). As detailed in the city of Bellevue Comprehensive Plan (1997), Newcastle Subarea Plan, the City has been approached by owners of property located outside the city limits wishing to obtain urban services, primarily sewer and water. Because the Comprehensive Plan states that the City "should not provide water and sewer service outside the existing corporate city limits without the area requesting service annexing to the City," the city of Bellevue is considering annexation of portions of the Newcastle Subarea that are currently within unincorporated King County. The Potential Annexation Area includes both developed and vacant land. The developed land is in the Eastgate neighborhood and portions of the Hilltop neighborhood. These areas have established land use patterns with relatively high single-family densities and urban services provided by Bellevue and other local service districts. The undeveloped areas include both large tracts of Cougar Mountain and the vacant portion of the Hilltop neighborhood. The King County Newcastle Community Plan calls for future growth to be concentrated in two urban villages on Cougar Mountain.

King County planning policies established employment and housing targets for each jurisdiction to ensure that the region had sufficient capacity to accommodate the anticipated growth. Unlike forecasts, which are market driven and reflect past and current trends, targets are policy driven and express agreed-upon goals for a community. A target also reflects the jurisdiction's commitment to have the infrastructure and zoning in place to accept the targeted amount of growth within a specified time frame.

In King County Comprehensive Plan targets (2001), employment in Bellevue was targeted to grow from 86,000 to 114,250 by 2013. Of the 28,250 new jobs, 64% were expected to be located in downtown Bellevue (Bellevue, 1997). In the 2000 Census, Bellevue was shown to have grown to over 120,000 jobs, well beyond 2013 County forecasts. Current economic conditions have likely reduced employment since 2000.

The city of Bellevue was forecasted to add an additional 8,575 housing units by 2013. The City has planned to accommodate 7,500 new housing units, 72% of which will be multifamily. Sixty-five percent of these are to be located downtown (Bellevue, 1997).

The city of Newcastle generally relies on the latest Puget Sound Regional Council data in estimating future growth in the city. As of 2000, the population of Newcastle was 50,378, with a

total population of 58,800 projected by 2030 (PSRC, 2003a). The city of Newcastle experienced a population growth rate of 6% between 2000 and 2002.

The city of Renton generally relies on the latest Puget Sound Regional Council data in estimating future growth in the city. The city of Renton experienced a population growth of 7.6% between 2000 and 2002. The city of Renton had a total population of 50,052 residents in the year 2000 Census (PSRC, 2003), with a projected population of 93,866 in 2030 (PSRC, 2003).

Renton is currently conducting planning efforts to move toward its regional growth center goals. As part of the city's regional growth center designation, Renton has agreed to accept 7,417 new households within the regional growth center in order to help achieve the mix of housing, jobs, and shops (PSRC, 2002b). In 2000, the Renton Regional Growth Center had reached 17,184 employees, 90% of its 2000 employment target. The mix of jobs in the Renton center is influenced by the presence of the Boeing Company and other manufacturing and industrial companies. Renton still has some remaining vacant and underused land in the historic downtown, which offers a limited capacity for new development. The city center includes a portion of the Cedar River and Lake Washington shorelines, and has a mix of uses. Community shopping, residential, and industrial uses share the area with office space, civic, and governmental functions (PSRC, 2002b). The land use element of Renton's comprehensive plan shows the old downtown area (southern part of the regional growth center) as commercial, and the north end (Boeing) as industrial.

As shown in Table 230-1, the SE Lake Washington SPA is expected to experience a relatively high rate of growth. Recent land use trends show that growth has been outstripping projections in both commercial and residential development. However, vacancy rates in Bellevue, as well as other areas of the Puget Sound, have increased drastically since 1999, and new construction has slowed (EDC, 2003).

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